

# *SAT Math Quizzes*

## *Volume 2*

### *Triumph College Admissions*

 **Skill Lesson**

**Quiz Time!**   
☐ A ☐ B ☐ C ☒ D ☐ E

**Hints!**   
☐ A ☐ B ☐ C ☒ D ☐ E

**Answers!**   
☐ A ☐ B ☐ C ☒ D ☐ E

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# *Math Lesson #8*

## *Rational/Radical Expressions*

- *Square of a Number*
- *Exponents*
- *Roots*
- *Fractional Exponents*
- *Solving Radical Equations*
- *Rational Expressions and Equations*

### *Triumph College Admissions*



**Skill Lesson**

**Quiz Time!**



**Hints!**



**Answers!**



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### Question 1

If  $y$  and  $x$  are positive integers such that  $y = x^2$ , which of the following could be the value of  $y$ ?

- (A) 8
- (B) 15
- (C) 21
- (D) 29
- (E) 36

### Question 2

If  $a^2 = 16$ , then  $a^3$  could equal

- (A) -64
- (B) -8
- (C) -4
- (D) 4
- (E) 16

### Question 3

If  $a = 5$  and  $b = 2$ , then  $(a + b)^2 =$

- (A) 9
- (B) 27
- (C) 29
- (D) 49
- (E) 81

### Question 4

Which of the following is not a square of a prime number?

- (A) 1
- (B) 4
- (C) 9
- (D) 25
- (E) 49

## Studyguide for the SAT Skill Quiz A: Square of a Number

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### Question 5

Given:  $x^2 = (y + 1)^2$ . If  $x^2 = 25$ , what is a value of  $y$ ?

- (A) 5
- (B) 4
- (C) 3
- (D) 2
- (E) 1

### Question 6

If  $a + b = -2$ , then what is the value of  $(a + b)^2$ ?

- (A) 2
- (B) 4
- (C) 0
- (D) -2
- (E) -4

### Question 7

If  $y$  and  $x$  are positive integers such that  $y = x^2$ , which of the following could be the value of  $y$ ?

- (A) 2
- (B) 4
- (C) 8
- (D) 10
- (E) 15

### Question 8

If  $a^2 = 9$ , then  $a^3$  could equal?

- (A) 9
- (B) 6
- (C) -6
- (D) -9
- (E) -27

## Studyguide for the SAT Skill Quiz A: Square of a Number

### Question 9

Given:  $x^2 = (y + 3)^2$ . If  $x^2 = 25$ , what is a value of  $y$ ?

- (A) 5  
(B) 4  
(C) 3  
(D) 2  
(E) 1

Grid-in your answer here:

### Question 10

If  $(a + 4)^2 = 36$  and  $a > 0$ , what is the value of  $a$ ?

[illegible]







### Question 1

$$(1.2)^2$$

- (A) 14.4
- (B) 0.144
- (C) 0.24
- (D) 1.44
- (E) 2.4

### Question 2

$$\text{If } t = 2, \text{ then } 3t^2 + (3t)^2 =$$

- (A) 72
- (B) 48
- (C) 25
- (D) 24
- (E) 18

### Question 3

$$\text{If } 3x^2 = 75, \text{ then } x =$$

- (A) -5
- (B)  $\sqrt{3}$
- (C) 5
- (D) 5 or -5
- (E)  $5\sqrt{3}$

### Question 4

$$\text{If } (a + 2)^2 = 10a - 1, \text{ then } a =$$

- (A) 0
- (B) 2
- (C) 3
- (D) 4
- (E) 5

## Studyguide for the SAT Skill Quiz B: Square of a Number

### Question 5

If  $x$  is a positive integer and  $x^2 + x = n$ , which of the following could be the value of  $n$ ?

- (A) 14
- (B) 16
- (C) 20
- (D) 36
- (E) 40

### Question 6

If  $(x + 5)^2 = (x + 1)^2$ , what is the value of  $x$ ?

- (A) -5
- (B) -3
- (C) -1
- (D) 0
- (E) 2

Grid-in your answer here:

### Question 7

If  $x > x^2$  and  $x > 0$ , what is one possible value for  $x$ ?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

## Studyguide for the SAT Skill Quiz B: Square of a Number

Grid-in your answer here:

### Question 8

If  $2x^2 = 14$ , what is the value of  $2x^4$ ?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

### Question 9

If  $a - b = -3$ , then what is the value of  $(a - b)^2 + 2$ ?

- (A) -9
- (B) -7
- (C) -4
- (D) 8
- (E) 11

### Question 10

If  $(x - 5)^2 = (x + 1)^2$ , what is the value of  $x$ ?

- (A) -2
- (B) -1
- (C) 0
- (D) 1
- (E) 2





### Question 1

$(x^2)^3$  equals

(A)  $x^6$

(B)  $x^5$

(C)  $x^4$

(D)  $x^{3/2}$

(E)  $x^{2/3}$

### Question 2

If  $2^{x+1} = 16$ , then  $x =$

(A) 1

(B) 2

(C) 3

(D) 4

(E) 5

### Question 3

If  $21,200 + x = 81,200$ , then  $x =$

(A)  $6 \times 10^3$

(B)  $6 \times 10^4$

(C)  $6 \times 10^5$

(D)  $8 \times 10^3$

(E)  $8 \times 10^4$

### Question 4

$$10^4 + 10^3 + 10^1 + 10^0 =$$

- (A) 10,001
- (B) 11,011
- (C) 11,111
- (D) 10,011
- (E) 11,110

### Question 5

$$\text{If } x^{2(x+1)} = 4^3, \text{ then } x =$$

- (A) 2
- (B)  $5/2$
- (C) 3
- (D)  $7/2$
- (E) 4

### Question 6

$$3^5 / 3^2 \text{ equals}$$

- (A) 1
- (B)  $3^2$
- (C)  $3^{5/2}$
- (D)  $3^3$
- (E)  $3^7$

## Studyguide for the SAT Skill Quiz A: Exponents

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### Question 7

If  $x$  is a positive integer,  $\frac{x^{(a+b)}}{x^a} =$

- (A)  $x^b$  (D)  $x^2$   
(B)  $1/x^b$  (E)  $1 + x^a$   
(C)  $\frac{x^{(a+b)}}{a}$

### Question 8

If  $x^3 = y^2$  and  $x = 4$ , what is a value for  $y$ ?

- (A) 2  
(B) 4  
(C) 6  
(D) 8  
(E) 10

### Question 9

Which of the following is equal to  $0.286 \times 10^4$ ?

- (A) 0.000286  
(B) 0.00286  
(C) 286  
(D) 2,860  
(E) 28,600

### Question 10

What is the units digit of  $3^{53}$ ?

- (A) 0
- (B) 1
- (C) 3
- (D) 7
- (E) 9





### Question 1

Which of the following numbers is a perfect square and a perfect cube?

- (A) 4
- (B) 8
- (C) 9
- (D) 16
- (E) 64

### Question 2

If  $5^x = 125$  and  $2^y = 16$ , then  $xy =$

- (A) 12
- (B) 7
- (C) 5
- (D) 4
- (E) 3

### Question 3

If  $(3^5)(5^3) = 9(15^k)$ , then  $k =$

- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) 5

### Question 4

$$\frac{(5a^3)^2}{(5a^2)}$$

- (A)  $a^3$
- (B)  $5a^3$
- (C)  $a^4$
- (D)  $5a^4$
- (E)  $20a^4$

### Question 5

If  $a^x \times a^3 = a^{21}$  and  $(a^3)^y = a^{12}$ , then  $x + y =$

- (A) 11
- (B) 18
- (C) 22
- (D) 26
- (E) 28

### Question 6

If  $3 \times 4^{x-1} = 48$ , then  $x =$

- (A) 2
- (B) 3
- (C) 4
- (D) 5
- (E) 6

### Question 7

If  $x^3$  is increased by 1, it is a perfect square. Which of the following could be a value for  $x$ ?

- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) 5

### Question 8

If  $2^x = c$ , which of the following equals  $4c$  in terms of  $x$ ?

- (A)  $8^x$
- (B)  $2^{2x}$
- (C)  $2^{2+x}$
- (D)  $2^{x/2}$
- (E)  $2^{x^2}$

### Question 9

Simplify  $(x^3)^2$ .

- (A)  $x^9$
- (B)  $x^6$
- (C)  $x^5$
- (D)  $x^{3/2}$
- (E)  $x^{2/3}$

### Question 10

20,196 is equal to

- (A)  $2 \times 10^3 + 1 \times 10^2 + 9 \times 10^1 + 6 \times 10^0$
- (B)  $2 \times 10^4 + 1 \times 10^3 + 9 \times 10^2 + 6 \times 10^1$
- (C)  $2 \times 10^4 + 1 \times 10^3 + 9 \times 10^1 + 6 \times 10^0$
- (D)  $2 \times 10^4 + 1 \times 10^2 + 9 \times 10^1 + 6 \times 10^0$
- (E)  $2 \times 10^4 + 1 \times 10^3 + 9 \times 10^2 + 6 \times 10^0$



### Question 1

Which of the following is equivalent to  $\sqrt{64}$ ?

- (A) 4
- (B) 8
- (C) 16
- (D) 32
- (E) 64

### Question 2

Which of the following is equivalent to  $\sqrt{72}$ ?

- (A)  $6\sqrt{2}$
- (B)  $3\sqrt{6}$
- (C)  $2\sqrt{6}$
- (D)  $6\sqrt{6}$
- (E)  $9\sqrt{2}$

### Question 3

If  $a^2 = b^6$ , then  $a =$

- (A)  $b^3 / 2$
- (B)  $2b$
- (C)  $6b^2$
- (D)  $b^3$
- (E)  $b^4$

### Question 4

$$(\sqrt{3})^2 - (\sqrt{2})^2 =$$

- (A) 1
- (B) 2
- (C) 5
- (D) 11
- (E) 14

### Question 5

If  $a^2 = 9$  and  $b^2 = 144$ , then  $ab$  could equal which of the following?

- (A) 6
- (B) 9
- (C) 36
- (D) 108
- (E) 1,296

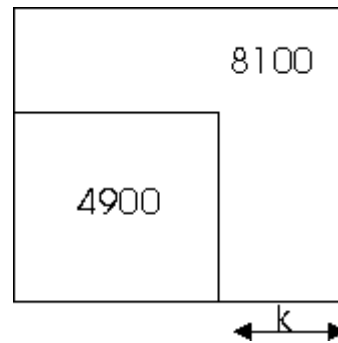
### Question 6

Which of the following is equivalent to  $\frac{7}{(7 + \sqrt{5})}$  ?

- (A)  $\frac{1}{(1 + \sqrt{5})}$
- (B)  $\frac{(49 - 7\sqrt{5})}{54}$
- (C)  $\frac{(49 - 7\sqrt{5})}{44}$
- (D)  $\frac{(49 - \sqrt{35})}{44}$
- (E)  $\frac{(49 - \sqrt{3})}{49}$

### Question 7

The figure shown is composed of a smaller square within a large square with the areas of the two squares as shown. What is the value of  $k$ ?



- (A) 10
- (B) 20
- (C) 32
- (D) 40
- (E) 200

### Question 8

Which of the following is equivalent to  $5\sqrt{2} \times 3\sqrt{2}$ ?

- (A)  $8\sqrt{2}$
- (B)  $4\sqrt{15}$
- (C) 16
- (D)  $15\sqrt{2}$
- (E) 30

### Question 9

Simplify:  $3\sqrt{2} + 2\sqrt{8}$

- (A)  $5\sqrt{6}$
- (B)  $5\sqrt{10}$
- (C)  $7\sqrt{2}$
- (D) 14
- (E) 24

### Question 10

If  $a^2 = 16b^8$ , then  $a =$

(A)  $2b^6$

(B)  $4b^6$

(C)  $8b^6$

(D)  $4b^4$

(E)  $8b^4$





### Question 1

$$\sqrt{50} + \sqrt{8} =$$

- (A)  $7\sqrt{2}$
- (B)  $2\sqrt{5} + 4\sqrt{2}$
- (C)  $9\sqrt{2}$
- (D)  $29\sqrt{2}$
- (E)  $2\sqrt{5} + 2\sqrt{2}$

### Question 2

Which of the following is equivalent to  $\sqrt{\frac{32}{9}}$ ?

- (A)  $\frac{3\sqrt{2}}{4}$
- (B)  $\frac{4\sqrt{2}}{3}$
- (C)  $2\sqrt{6}$
- (D)  $\frac{4\sqrt{6}}{3}$
- (E)  $\frac{3\sqrt{3}}{4}$

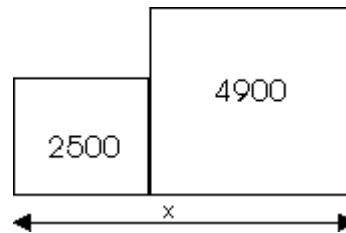
### Question 3

Which of the following is equivalent to  $\sqrt{3} \times \sqrt{15}$ ?

- (A)  $5\sqrt{3}$
- (B)  $15\sqrt{3}$
- (C)  $3\sqrt{15}$
- (D)  $5\sqrt{9}$
- (E)  $3\sqrt{5}$

### Question 4

The figure shown is composed of two squares with the areas shown. What is the value of  $x$ ?



- (A) 50
- (B) 95
- (C) 120
- (D) 160
- (E) 600

### Question 5

$$\sqrt{a} + 3\sqrt{a} =$$

- (A)  $3a$
- (B)  $4\sqrt{a}$
- (C)  $4a$
- (D)  $3a^2$
- (E)  $4a^2$

### Question 6

Which of the following is equivalent to  $\sqrt{2}(\sqrt{2} + 4\sqrt{3})$ ?

- (A)  $4\sqrt{7}$
- (B)  $5\sqrt{7}$
- (C)  $2 + 4\sqrt{5}$
- (D)  $2 + 4\sqrt{6}$
- (E)  $2 + 4\sqrt{3}$

### Question 7

Which of the following is equivalent to  $3\sqrt{7} - 5\sqrt{28}$ ?

- (A)  $-7\sqrt{7}$
- (B)  $-2\sqrt{21}$
- (C)  $-7$
- (D)  $-7\sqrt{14}$
- (E)  $-8\sqrt{7}$

### Question 8

If  $a^2 = 25$  and  $b^2 = 81$ , then  $a + b$  could equal all of the following except:

- (A)  $-14$
- (B)  $-4$
- (C)  $4$
- (D)  $10$
- (E)  $14$

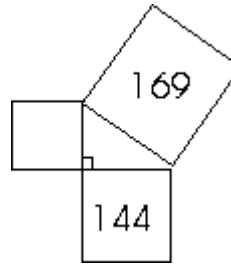
### Question 9

A rectangle has length  $5\sqrt{3}$  and width  $4\sqrt{3}$ , which of the following represents the area of the rectangle?

- (A)  $9\sqrt{3}$
- (B)  $18\sqrt{3}$
- (C)  $20\sqrt{3}$
- (D)  $54$
- (E)  $60$

### Question 10

In the figure shown, the area of the two larger squares is given. What is the length of a side of the smaller square?



- (A) 1
- (B) 5
- (C)  $\sqrt{313}$
- (D) 25
- (E) 313



Time!



### Question 1

What is the value of  $x$ , if  $\sqrt{x} = 3$ ?

- (A)  $-\sqrt{3}$
- (B)  $\sqrt{3}$
- (C) 3
- (D) 6
- (E) 9

### Question 2

What is the value of  $x$ , if  $\sqrt{x+1} = 4$ ?

- (A) 3
- (B)  $\sqrt{15}$
- (C) 7
- (D) 15
- (E) 17

### Question 3

Solve for x, given  $\sqrt{(2x + 3)} = x$ .

- (A) 3 or -1
- (B) -3 or 1
- (C) 2 or 3
- (D) 3
- (E) -3

### Question 4

Solve for x, given  $\sqrt{(x + 1)} = 5$ .

- (A) 3
- (B) 9
- (C) 11
- (D) 24
- (E) 26

### Question 5

Solve for x, given  $2 + \sqrt{(2x + 3)} = 7$ .

- (A) 2
- (B)  $\frac{13}{2}$
- (C) 11
- (D) 39
- (E) 42

### Question 6

Solve for x, given  $\sqrt{x + 4} = 3$ .

- (A) -1
- (B) 2
- (C) 5
- (D) 10
- (E) 13

### Question 7

Solve for x given  $x = 3 + \sqrt{x - 1}$ .

- (A) -2
- (B) 2
- (C) 2 or 5
- (D) -2 or -5
- (E) 5

### Question 8

Solve for x, given  $x - \sqrt{x - 5} = 5$ .

- (A) -6
- (B) 5
- (C) 6
- (D) -5 or -6
- (E) 5 or 6

### Question 9

Solve for x, given  $-7 = \sqrt{(2x + 3)}$ .

- (A) -26
- (B) -2
- (C)  $\frac{11}{2}$
- (D) 23
- (E) No Solution

### Question 10

Solve for x, given  $\sqrt{(5 - x)} = 3$ .

- (A) -4
- (B) 1
- (C) 4
- (D) 11
- (E) No Solution





## Question 1

Simplify  $\frac{2}{x} + \frac{3}{7}$ .

- (A)  $\frac{17}{7x}$
- (B)  $\frac{3x + 14}{7x}$
- (C)  $\frac{5}{x + 7}$
- (D)  $\frac{2 + 3x}{7x}$
- (E)  $\frac{14 + 3x}{7 + x}$

## Question 2

Simplify  $\frac{3}{x} - \frac{5}{y}$ .

- (A)  $\frac{-2}{x - y}$
- (B)  $\frac{-2}{xy}$
- (C)  $\frac{5x - 3y}{xy}$
- (D)  $\frac{3y - 5x}{xy}$
- (E)  $\frac{3y + 5x}{xy}$

### Question 3

Simplify  $\frac{3}{x} + \frac{2}{x+1}$ .

- (A)  $\frac{5x+3}{x^2+x}$
- (B)  $\frac{5x+1}{x+1}$
- (C)  $\frac{5x+3}{x+1}$
- (D)  $5x+3$
- (E)  $\frac{5x+1}{x^2+x}$

### Question 4

Simplify  $\frac{4}{x+2} + \frac{x}{x-1}$ .

- (A)  $x^2 + 6x - 4$
- (B)  $\frac{x^2+6x-4}{x^2+x-2}$
- (C)  $\frac{x^2+4x+1}{x^2+x-2}$
- (D)  $\frac{x+4}{2x+1}$
- (E)  $\frac{x^2+2x+4}{x+2}$

### Question 5

Simplify  $\frac{x+3}{x+1} + \frac{x-4}{x-2}$

- (A)  $\frac{2x-1}{x^2-x-2}$
- (B)  $2x^2-2x-10$
- (C)  $\frac{x^2-12}{x^2-2}$
- (D)  $\frac{2x^2-2x-10}{x^2-x-2}$
- (E) 1

### Question 6

Simplify

$$\frac{\frac{1}{x} + 3}{x+1}$$

- (A)  $\frac{3x^2+4x+1}{x}$
- (B)  $\frac{3x+3}{x}$
- (C)  $\frac{1+3x}{x^2+x}$
- (D)  $\frac{3}{x^2+x}$
- (E)  $\frac{4}{x^2+x}$

### Question 7

Simplify

$$\frac{\frac{1}{a} + \frac{1}{b}}{\frac{1}{a} + 1}.$$

- (A)  $\frac{1}{b}$
- (B)  $\frac{2}{1+b}$
- (C)  $\frac{a+b}{1+a}$
- (D)  $\frac{a+b}{b+ab}$
- (E)  $b$

### Question 8

Simplify

$$\frac{\frac{1}{3} + \frac{1}{4}}{1 - \frac{1}{5}}.$$

- (A)  $\frac{5}{28}$
- (B)  $\frac{7}{15}$
- (C)  $\frac{35}{48}$
- (D)  $\frac{48}{35}$
- (E)  $\frac{15}{7}$

### Question 9

Solve for x.

$$\frac{1}{x} + \frac{2}{3} = \frac{1}{4}$$

- (A)  $\frac{-12}{5}$
- (B)  $\frac{-5}{12}$
- (C)  $\frac{5}{12}$
- (D)  $\frac{12}{7}$
- (E)  $\frac{8}{3}$

### Question 10

Solve for x.

$$\frac{5}{x+3} = \frac{4}{x-2}$$

- (A)  $\frac{2}{9}$
- (B) 2
- (C) 5
- (D) 13
- (E) 22



# *Math Lesson #9*

## *Lines and Angles*

- *Parallel Lines*
- *Straight Angles*
- *Vertical Angles*
- *Geometric Notation*

### *Triumph College Admissions*



**Skill Lesson**

**Quiz Time!**



**Hints!**



**Answers!**



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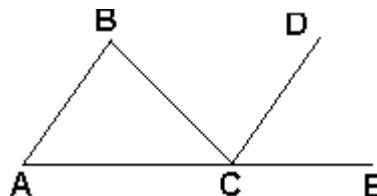




## Question 1

In the figure shown,  $AB \parallel CD$  and  $\angle ABC = 80^\circ$ .

What is the value of  $\angle BCD$ ?

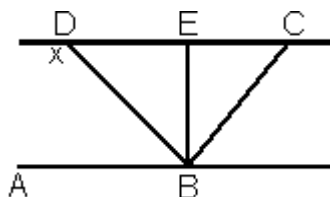


- (A) 65
- (B) 75
- (C) 80
- (D) 95
- (E) 115

## Question 2

$DC \parallel AB$   $EB \perp DC$

In the figure shown, if  $x = 130$ , what is the value of  $\angle DBE$ ?

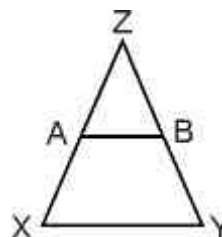


- (A) 40
- (B) 50
- (C) 55
- (D) 60
- (E) 125

## Question 3

In the figure shown,  $AB \parallel XY$  and  $\angle BYX = 70^\circ$ .

What is the value of  $\angle ABY$ ?



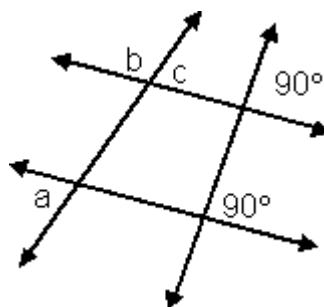
- (A) 70
- (B) 100
- (C) 110
- (D) 130
- (E) 140

## Studyguide for the SAT Skill Quiz A: Parallel Lines

### Question 4

In the figure shown, if  $c = 60^\circ$ ,  
what is the value of  $c - a$ ?

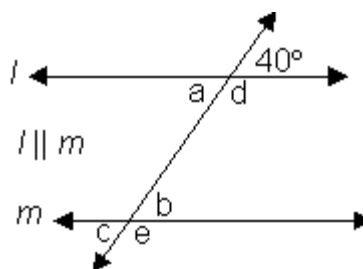
- (A) 20
- (B) 40
- (C) 50
- (D) 60
- (E) 70



### Question 5

In the figure shown,  
what is the value of  $b$ ?

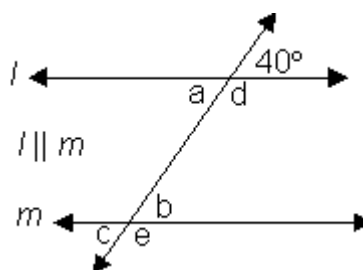
- (A) 180
- (B) 130
- (C) 100
- (D) 50
- (E) 40



### Question 6

In the figure shown,  
what is the value of  $e$ ?

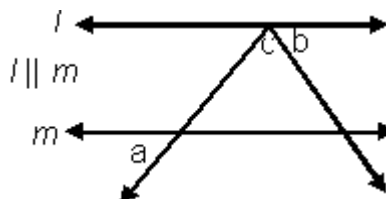
- (A) 180
- (B) 140
- (C) 100
- (D) 50
- (E) 40



### Question 7

In the figure shown,  
if  $a = 30$  and  $b = 60$ ,  
what is the value of  $c$ ?

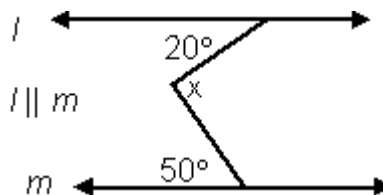
- (A) 50
- (B) 70
- (C) 80
- (D) 90
- (E) 100



## Studyguide for the SAT Skill Quiz A: Parallel Lines

### Question 8

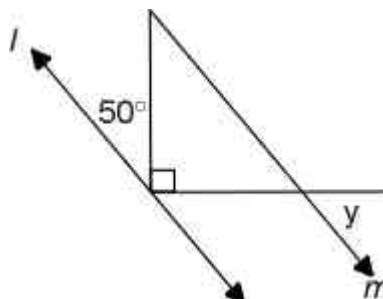
In the figure shown, if  $l \parallel m$ ,  
what is the value of  $x$ ?



- (A) 30  
(B) 50  
(C) 70  
(D) 100  
(E) 110

### Question 9

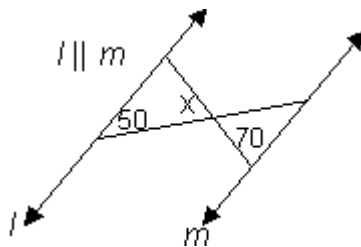
In the figure shown, if  $l \parallel m$ ,  
what is the value of  $y$ ?



- (A) 30  
(B) 40  
(C) 50  
(D) 60  
(E) 90

Grid-in your answer here:

### Question 10



In the figure shown, if  $l \parallel m$ , what is the value of  $x$ ?

.	/	/	.
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9





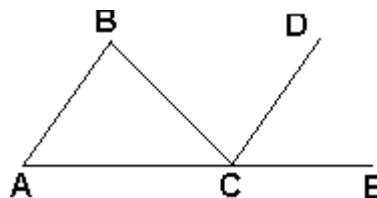
## Question 1

Three lines  $L_1$ ,  $L_2$ , and  $L_3$  lie in a plane. If  $L_1 \parallel L_2$ , which of the following is never true?

- (A) A point on  $L_1$  can lie on  $L_3$ .
- (B) A point on  $L_1$  cannot lie on  $L_2$ .
- (C) A point on  $L_2$  can lie on  $L_3$ .
- (D) A point on  $L_3$  can lie on both  $L_1$  and  $L_2$ .
- (E) A point on  $L_3$  cannot lie on both  $L_1$  and  $L_2$ .

## Question 2

In the figure shown,  $AB \parallel CD$  and  $\angle ABC = 75^\circ$ .  
What is the value of  $\angle BCD$ ?

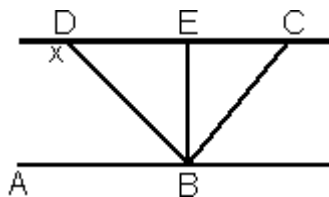


- (A) 65
- (B) 75
- (C) 80
- (D) 95
- (E) 115

## Question 3

$DC \parallel AB$   $EB \perp DC$

In the figure shown, if  $x = 125$ ,  
what is the value of  $\angle ABD$ ?

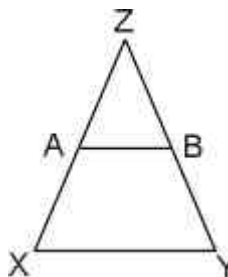


- (A) 30
- (B) 55
- (C) 60
- (D) 125
- (E) 145

## Question 4

In the figure shown,  $AB \parallel XY$  and  $\angle BYX = 65^\circ$ .  
What is the value of  $\angle ABY$ ?

- (A) 65
- (B) 105
- (C) 115
- (D) 135
- (E) 140

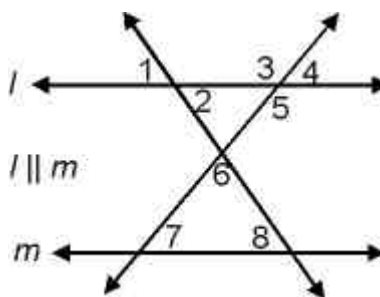


## Question 5

In the figure shown, which of the following pairs of angles are equal in measure?

- I. 1 and 8
- II. 4 and 6
- III. 2 and 8

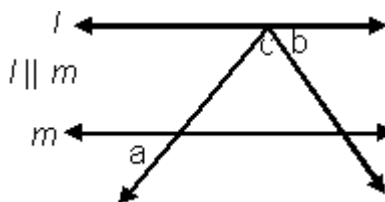
- (A) I only
- (B) II only
- (C) III only
- (D) I and III only
- (E) I, II, and III



## Question 6

In the figure shown, if  $l \parallel m$ ,  
 $a = 40$ , and  $b = 60$ ,  
what is the value of  $c$ ?

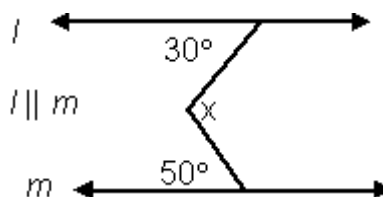
- (A) 50
- (B) 70
- (C) 80
- (D) 90
- (E) 100



## Question 7

In the figure shown, if  $l \parallel m$ , what is the value of  $x$ ?

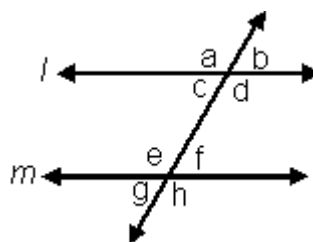
- (A) 30
- (B) 50
- (C) 80
- (D) 100
- (E) 110



## Question 8

In the figure shown, if  $l \parallel m$ , which of the following is not true?

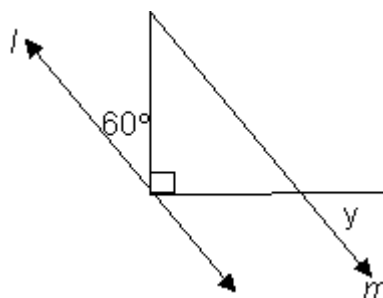
- (A)  $a = e$
- (B)  $c = f$
- (C)  $h = a$
- (D)  $b = e$
- (E)  $g = b$



## Question 9

In the figure shown, if  $l \parallel m$ , what is the value of  $y$ ?

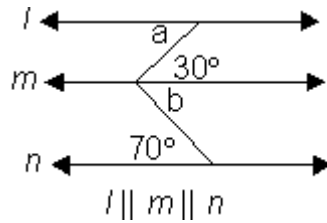
- (A) 30
- (B) 40
- (C) 50
- (D) 60
- (E) 90



## Studyguide for the SAT Skill Quiz B: Parallel Lines

Grid-in your answer here:

### Question 10



In the figure shown, what is the value of  $a + b$ ?

.	/	/	.	.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9



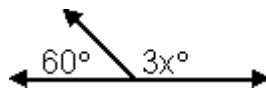


### Question 1

$\angle 1$  and  $\angle 2$  form a straight angle, and  $\angle 1$  is three times larger than  $\angle 2$ .  
What is the measure of  $\angle 1$ ?

- (A) 150
- (B) 135
- (C) 120
- (D) 90
- (E) 60

### Question 2

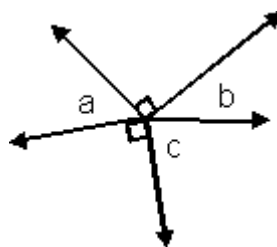


In the figure shown, what is the value of  $x$ ?

- (A) 40
- (B) 45
- (C) 46
- (D) 50
- (E) 55

### Question 3

In the figure shown,  
what is the value of  $a + b + c$ ?



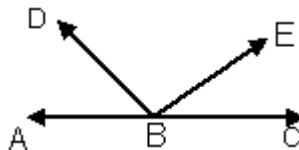
- (A) 90
- (B) 150
- (C) 180
- (D) 210
- (E) 220

## Studyguide for the SAT Skill Quiz A: Straight Angles

### Question 4

In the figure shown,  $\angle ABE = 150^\circ$   
and  $\angle DBC = 130^\circ$ .

What is the value of  $\angle DBE$ ?

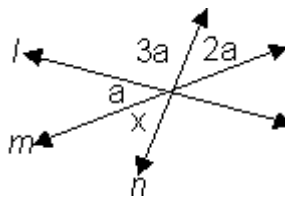


- (A) 280
- (B) 100
- (C) 80
- (D) 50
- (E) 20

### Question 5

In the figure shown, lines  $l$ ,  $m$ , and  $n$   
intersect at one point.

What is the value of  $x$ ?



- (A) 15
- (B) 25
- (C) 30
- (D) 60
- (E) 75

### Question 6

If it is 4 o'clock on a standard 12-hour clock, what is the degree measure  
of the smaller angle formed by the minute hand and hour hand?

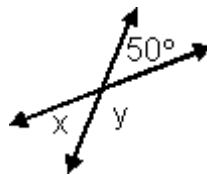
- (A) 60
- (B) 90
- (C) 100
- (D) 120
- (E) 150

## Studyguide for the SAT Skill Quiz A: Straight Angles

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### Question 7

In the figure shown,  
what is the measure of  $y - x$ ?



- (A) 50
- (B) 80
- (C) 100
- (D) 120
- (E) 130

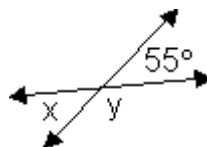
### Question 8

If it is 5 o'clock on a standard 12-hour clock, what is the degree measure of the smaller angle formed by the minute hand and hour hand?

- (A) 60
- (B) 90
- (C) 100
- (D) 120
- (E) 150

### Question 9

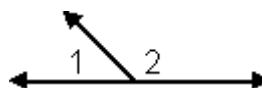
In the figure shown,  
what is the measure of  $y - x$ ?



- (A) 55
- (B) 70
- (C) 100
- (D) 125
- (E) 130

### Question 10

In the figure shown,  $\angle 1$  is  $30^\circ$  less than twice the measure of  $\angle 2$ .  
What is the measure of  $\angle 1$ ?

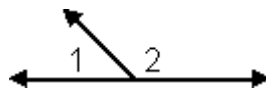


- (A) 50
- (B) 55
- (C) 110
- (D) 125
- (E) 130





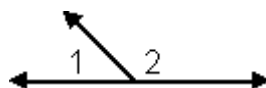
### Question 1



In the figure shown,  $\angle 1$  is  $70^\circ$  less than the measure of  $\angle 2$ .  
What is the measure of  $\angle 1$ ?

- (A) 50
- (B) 55
- (C) 110
- (D) 125
- (E) 130

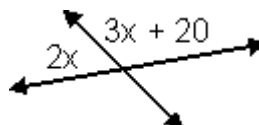
### Question 2



In the figure shown,  $\angle 1$  is  $\frac{1}{3}$  the measure of  $\angle 2$ .  
What is the measure of  $\angle 2$ ?

- (A) 45
- (B) 60
- (C) 90
- (D) 120
- (E) 135

### Question 3



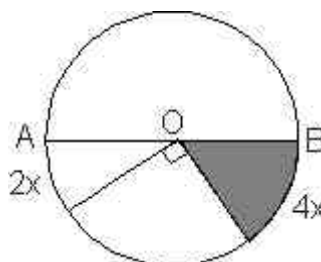
In the figure shown,  
what is the value of  $x$ ?

- (A) 14
- (B) 20
- (C) 32
- (D) 40
- (E) 44

## Studyguide for the SAT Skill Quiz B: Straight Angles

### Question 4

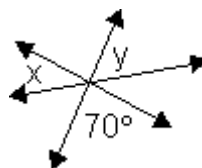
In the figure shown, the radius of the circle with diameter AB and center O is 2. What is the area of the shaded region?



- (A)  $\pi/3$
- (B)  $\pi/2$
- (C)  $2\pi/3$
- (D)  $\pi$
- (E)  $4\pi/3$

### Question 5

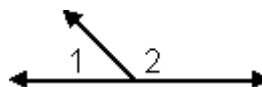
In the figure shown, what is the value of  $x + y$ ?



- (A) 70
- (B) 90
- (C) 100
- (D) 110
- (E) 130

### Question 6

In the figure shown, the measure of  $\angle 1$  is  $30^\circ$  less than the measure of  $\angle 2$ . What is the measure of  $\angle 2$ ?

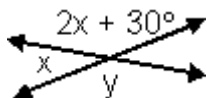


- (A) 15
- (B) 75
- (C) 100
- (D) 105
- (E) 110

# Studyguide for the SAT Skill Quiz B: Straight Angles

Grid-in your answer here:

## Question 7

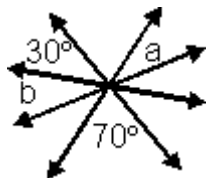


In the figure shown, what is the value of  $y$ ?

	/	/	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

## Question 8



In the figure shown, what is the value of  $a + b$ ?

	/	/	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

## Question 9

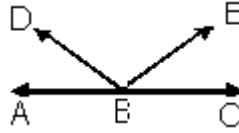
$\angle 1$  and  $\angle 2$  form a straight angle,  
and  $\angle 1$  is five times larger than  $\angle 2$ .  
What is the measure of  $\angle 2$ ?

- (A) 150
- (B) 90
- (C) 60
- (D) 45
- (E) 30

## Studyguide for the SAT Skill Quiz B: Straight Angles

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### Question 10



In the figure shown,  $\angle ABE = 140^\circ$  and  $\angle DBC = 120^\circ$ .

What is the value of  $\angle DBE$ ?

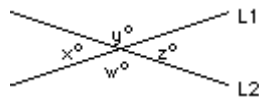
- (A) 280
- (B) 100
- (C) 80
- (D) 40
- (E) 20





## Question 1

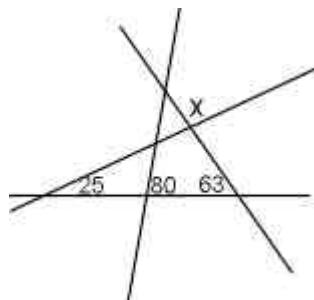
In the figure shown, which of the following must be equal to 0?



- I.  $(x + y) - (w + z)$
- II.  $xz - wy$
- III.  $180 - \frac{xy}{wz}$
- (A) I only
- (B) II only
- (C) I and II
- (D) I, II, and III
- (E) None

## Question 2

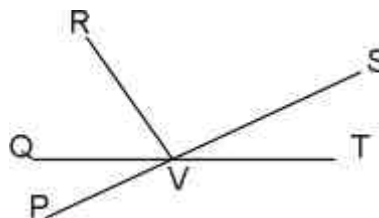
In the figure shown, what is the value of  $x$ ?



- (A) 25
- (B) 63
- (C) 80
- (D) 92
- (E) 105

## Question 3

In the figure shown,  $\angle RVS$  is a right angle and  $\angle RVQ = 78^\circ$ . What is the value of  $\angle SVT$ ?

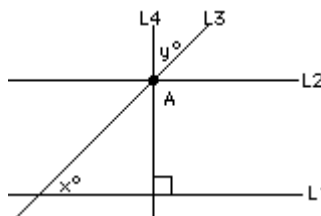


- (A) 10
- (B) 12
- (C) 22
- (D) 33
- (E) 78

## Studyguide for the SAT Skill Quiz A: Vertical Angles

### Question 4

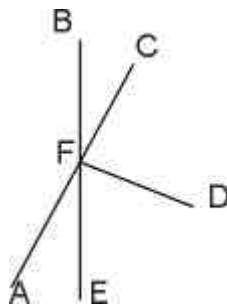
In the figure shown, line L2 is parallel to line L1, and L1 is perpendicular to L4. Point A is a point on lines L2, L3, and L4. If  $y = 50$ , what is the value of  $x$ ?



- (A) 30
- (B) 40
- (C) 45
- (D) 50
- (E) 60

### Question 5

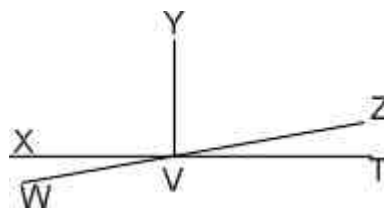
In the figure shown,  
 $\angle CFD = 90^\circ$  and  $\angle AFE = 35^\circ$ .  
What is the value of  $\angle BFD$ ?



- (A) 35
- (B) 55
- (C) 90
- (D) 125
- (E) 145

### Question 6

In the figure shown,  
 $YV \perp XT$ , and  $\angle YVZ = 70^\circ$ .  
What is the value of  $\angle XVW$ ?



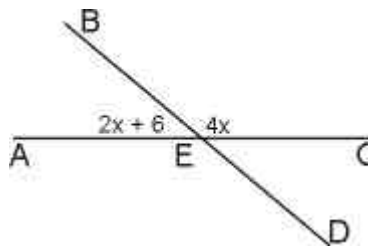
- (A) 10
- (B) 20
- (C) 60
- (D) 80
- (E) 90

## Studyguide for the SAT Skill Quiz A: Vertical Angles

### Question 7

In the figure shown,  
what is the value of  $\angle AED$ ?

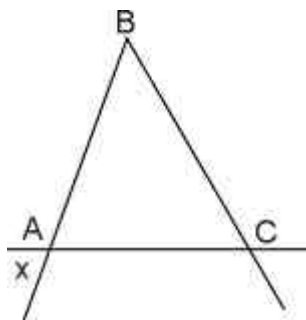
- (A) 29
- (B) 64
- (C) 116
- (D) 128
- (E) 151



### Question 8

In the figure shown, given  
 $\angle ABC = 70^\circ$  and  $AB = BC$ ,  
what is the value of  $x$ ?

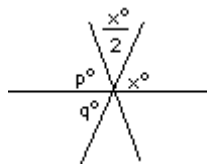
- (A) 20
- (B) 30
- (C) 55
- (D) 70
- (E) 110



### Question 9

In the figure shown, find  $p + q$  in  
terms of  $x$ .

- (A)  $\frac{x}{2} - 180$
- (B)  $90 - \frac{x}{2}$
- (C)  $180 - \frac{x}{2}$
- (D)  $180 - x$
- (E)  $2x$

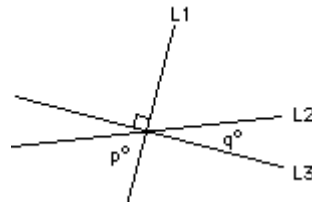


## Studyguide for the SAT Skill Quiz A: Vertical Angles

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### Question 10

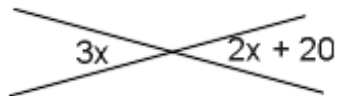
In the figure shown,  $L1 \perp L3$ . Find  $p + q$ .



- (A) 45
- (B) 60
- (C) 90
- (D) 120
- (E) 180



### Question 1

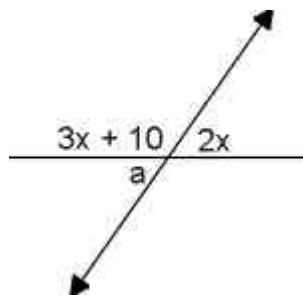


In the figure shown, what is the value of  $x$ ?

- (A) 10
- (B) 16
- (C) 20
- (D) 100
- (E) 180

### Question 2

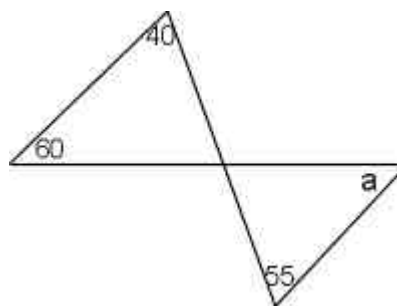
In the figure shown,  
what is the value of  $a$ ?



- (A) 164
- (B) 76
- (C) 68
- (D) 34
- (E) 20

### Question 3

In the figure shown,  
what is the value of  $a$ ?

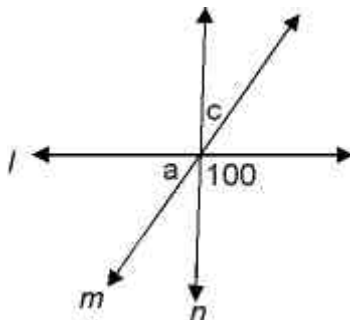


- (A) 40
- (B) 45
- (C) 55
- (D) 60
- (E) 80

# Studyguide for the SAT Skill Quiz B: Vertical Angles

Grid-in your answer here:

## Question 4

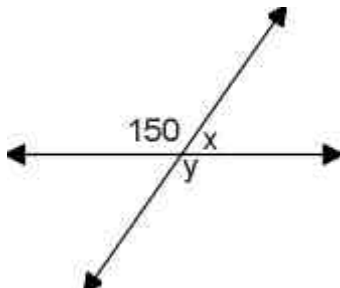


In the figure shown,  $l$ ,  $m$ , and  $n$  all intersect at a single point.  
What is the value of  $a + c$ ?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

## Question 5

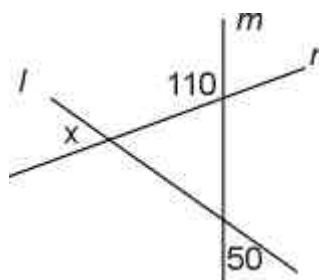


In the figure shown, what is the value of  $y - x$ ?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

## Question 6

In the figure shown,  
 $l$ ,  $m$ , and  $n$  intersect as shown.  
What is the value of  $x$ ?



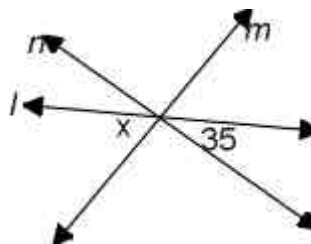
- (A) 50
- (B) 60
- (C) 70
- (D) 80
- (E) 110

## Studyguide for the SAT Skill Quiz B: Vertical Angles

### Question 7

In the figure shown, given  $n \perp m$ , what is the value of  $x$ ?

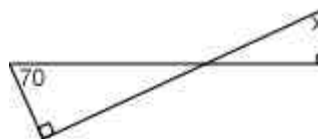
- (A) 135
- (B) 125
- (C) 90
- (D) 55
- (E) 35



### Question 8

In the figure shown, what is the value of  $x$ ?

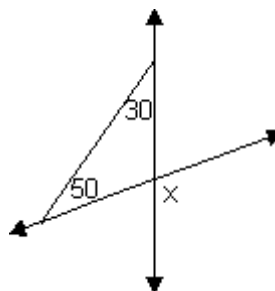
- (A) 160
- (B) 110
- (C) 90
- (D) 70
- (E) 20



### Question 9

In the figure shown, what is the value of  $x$ ?

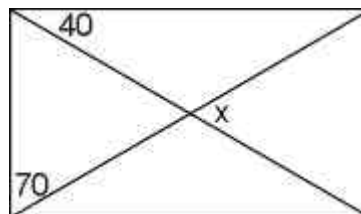
- (A) 30
- (B) 50
- (C) 80
- (D) 100
- (E) 120



### Question 10

The figure shown is a rectangle. What is the value of  $x$ ?

- (A) 40
- (B) 50
- (C) 60
- (D) 70
- (E) 110



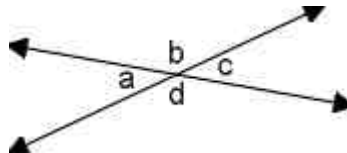






A B C D E

## Question 1



In the figure shown,  
which of the following must equal zero?

I.  $ab - cd$

II.  $(b + d) - (a + c)$

III.  $(a + d) - (b + c)$

(A) I only

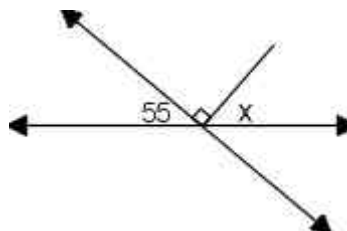
(B) II only

(C) III only

(D) I and II only

(E) I and III only

## Question 2



In the figure shown,  
what is the value of  $x$ ?

(A) 25

(B) 35

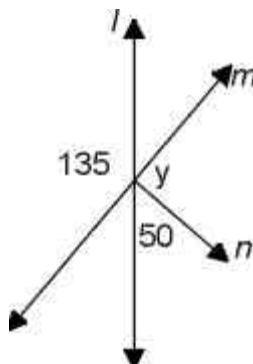
(C) 45

(D) 55

(E) 125

## Question 3

In the figure shown,  
lines  $l$  and  $m$  intersect as shown  
with ray  $n$  extending  
from their point of intersection.  
What is the value of  $y$ ?



(A) 75

(B) 85

(C) 90

(D) 105

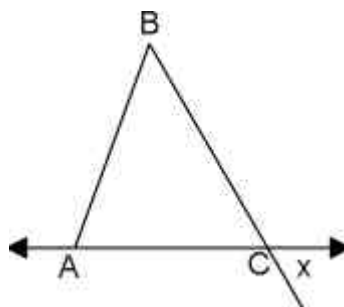
(E) 185

## Studyguide for the SAT Skill Quiz C: Vertical Angles

### Question 4

In the figure shown,  
 $AB = BC$  and  $\angle B = 70$ .  
What is the value of  $x$ ?

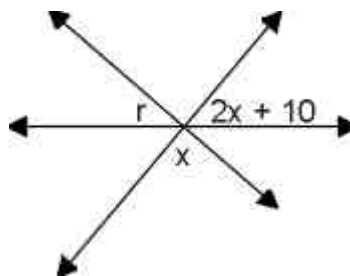
- (A) 110
- (B) 80
- (C) 70
- (D) 55
- (E) 45



### Question 5

In the figure shown,  
what is the value of  $r$  in terms of  $x$ ?

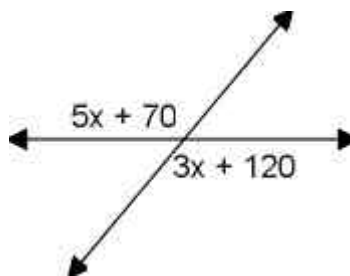
- (A)  $3x + 10$
- (B)  $3x/2 + 5$
- (C)  $6x + 340$
- (D)  $3x + 170$
- (E)  $170 - 3x$



### Question 6

In the figure shown,  
what is the value of  $x$ ?

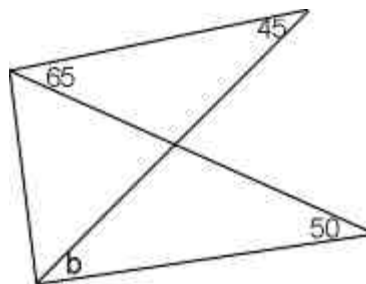
- (A) 10
- (B) 25
- (C) 35
- (D) 45
- (E) 55



### Question 7

In the figure shown,  
what is the value of  $b$ ?

- (A) 45
- (B) 50
- (C) 60
- (D) 65
- (E) 70

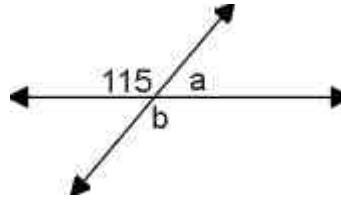


## Studyguide for the SAT Skill Quiz C: Vertical Angles

### Question 8

In the figure shown,  
what is the value of  $b - a$ ?

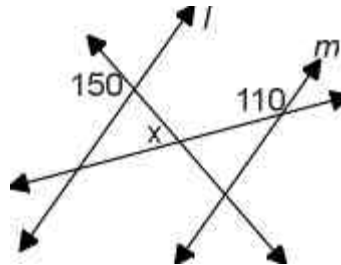
- (A) 115
- (B) 85
- (C) 65
- (D) 50
- (E) 10



### Question 9

In the figure shown, if  $l \parallel m$ ,  
what is the value of  $x$ ?

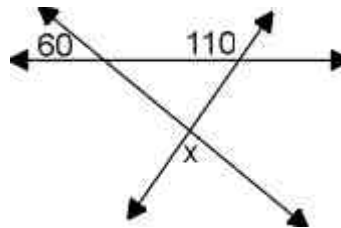
- (A) 10
- (B) 30
- (C) 40
- (D) 70
- (E) 80



### Question 10

In the figure shown,  
what is the value of  $x$ ?

- (A) 130
- (B) 120
- (C) 110
- (D) 50
- (E) 10





# *Math Lesson #10*

## *Triangles*

- *Interior Angles*
- *Pythagorean Theorem*
- *Special Triangles*

### *Triumph College Admissions*

 **Skill Lesson**

**Quiz Time!**   
☐ A ☐ B ☐ C ☒ D ☐ E

**Hints!**   
☐ A ☐ B ☐ C ☒ D ☐ E

**Answers!**   
☐ A ☐ B ☐ C ☒ D ☐ E

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### Question 1

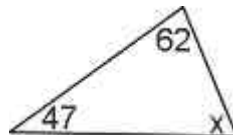


Figure is not drawn to scale.

In the above figure, what is the value of  $x$ ?

- (A) 71
- (B) 81
- (C) 99
- (D) 101
- (E) 111

### Question 2

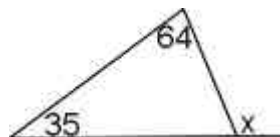


Figure is not drawn to scale.

In the above figure, what is the value of  $x$ ?

- (A) 61
- (B) 71
- (C) 89
- (D) 99
- (E) 101

### Question 3



Figure is not drawn to scale.

In the above figure, what is the value of  $x$ ?

- (A) 128
- (B) 117
- (C) 115
- (D) 72
- (E) 65

## Studyguide for the SAT Skill Quiz A: Interior Angles

### Question 4

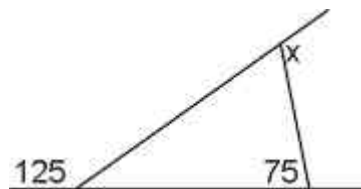


Figure is not drawn to scale.

In the above figure, what is the value of  $x$ ?

- (A) 50
- (B) 100
- (C) 105
- (D) 130
- (E) 140

### Question 5

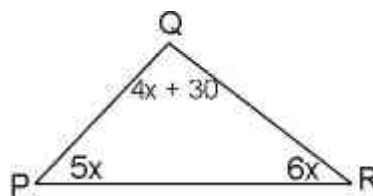
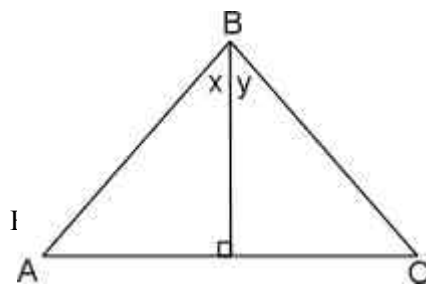


Figure is not drawn to scale.

In the above figure, what is the value of  $\angle Q$ ?

- (A) 10
- (B) 50
- (C) 60
- (D) 70
- (E) 90

### Question 6



In the figure shown, if  $AB = CB$ , what is the value of  $x - y$ ?

- (A) 0
- (B) 10
- (C) 20
- (D) 45
- (E) 90



## Studyguide for the SAT Skill Quiz A: Interior Angles

### Question 7

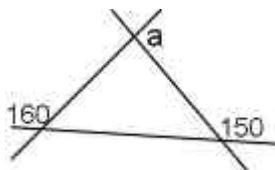
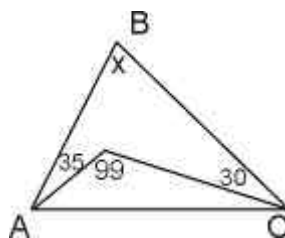


Figure is not drawn to scale.

In the figure shown, what is the value of  $a$ ?

- (A) 10
- (B) 50
- (C) 100
- (D) 130
- (E) 310

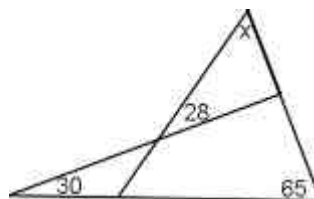
### Question 8



In the figure shown,  
what is the value of  $x$ ?

- (A) 25
- (B) 34
- (C) 35
- (D) 65
- (E) 164

### Question 9

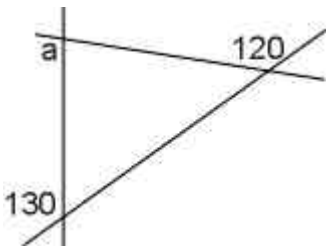


In the figure shown, what is the value of  $x$ ?

- (A) 35
- (B) 57
- (C) 58
- (D) 67
- (E) 95

Grid-in your answer here:

Question 10



In the figure shown, what is the value of  $a$ ?

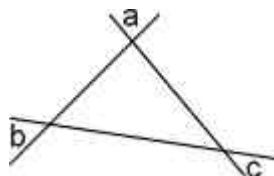
	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9



A B C D E

Grid-in your answer here:

## Question 1



In the figure shown, what is the value of  $a + b + c$ ?

	/	/	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

## Question 2

In a regular hexagon all sides are equal and all angles are equal.  
What is the degree measure of each interior angle of a regular hexagon?

	/	/	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

# Studyguide for the SAT Skill Quiz B: Interior Angles

Grid-in your answer here:

## Question 3

In a regular pentagon all sides are equal and all angles are equal. What is the degree measure of each exterior angle of a regular pentagon?

	/	/	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

## Question 4

In the figure shown,  $\angle S < \angle T$ .  
Which of the following must be true?

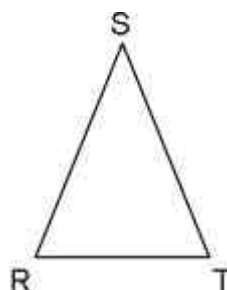
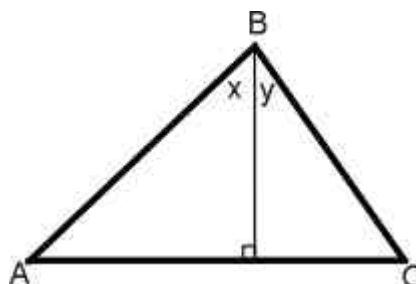


Figure is not drawn to scale.

- (A)  $RT < RS$
- (B)  $RT < ST$
- (C)  $RS = ST$
- (D)  $ST < RS$
- (E)  $RT = RS$

## Question 5

In the figure shown,  
 $\angle A = 40$  and  $\angle C = 50$ .  
What is the value of  $x - y$ ?



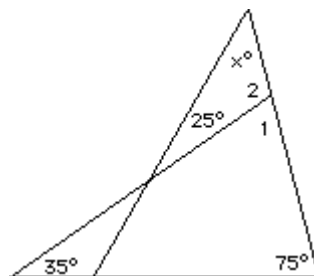
- (A) 10
- (B) 20
- (C) 30
- (D) 40
- (E) 50

## Studyguide for the SAT Skill Quiz B: Interior Angles

### Question 6

In the figure shown,  $x =$

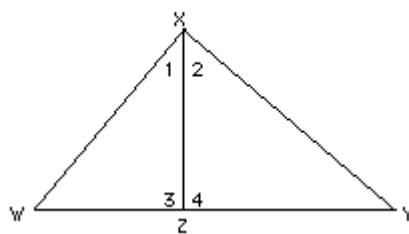
- (A) 10
- (B) 30
- (C) 35
- (D) 45
- (E) 60



### Question 7

In the figure shown,  $\angle WXY$  is a right angle,  $XZ \perp WY$ , and  $\angle 1 = 40$ . Find  $\angle XYZ$ .

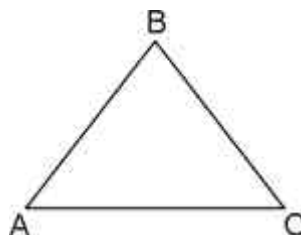
- (A) 40
- (B) 50
- (C) 90
- (D) 100
- (E) 110



### Question 8

In the triangle shown,  $AB = BC$ , and  $\angle B = 70$ . What is the value of  $\angle A$ ?

- (A) 55
- (B) 65
- (C) 70
- (D) 110
- (E) 120

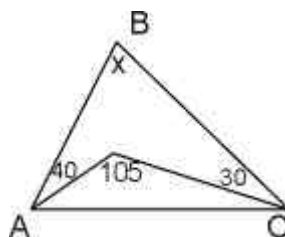


## Studyguide for the SAT Skill Quiz B: Interior Angles

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### Question 9

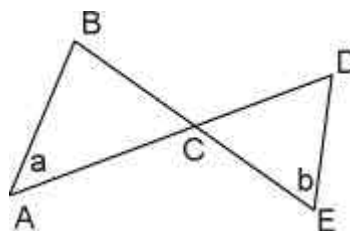
In the figure shown,  
what is the value of  $x$ ?



- (A) 30
- (B) 35
- (C) 40
- (D) 70
- (E) 75

### Question 10

In the figure shown,  
 $\angle B = 60$  and  $\angle D = 50$ .  
What is the value of  $a$  in terms of  $b$ ?

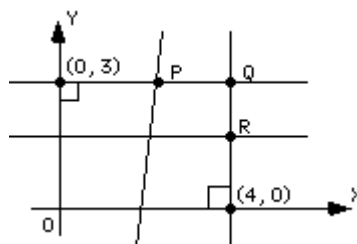


- (A)  $b + 110$
- (B)  $b + 10$
- (C)  $b - 110$
- (D)  $10 - b$
- (E)  $b - 10$



## Question 1

In the figure shown, which of the lettered points is (are) the greatest distance from the origin?



- (A) P only
- (B) Q only
- (C) R only
- (D) P and R
- (E) All are equally distant from the origin

## Question 2

If a right triangle has one side of length 1, which of the following could be the lengths of the other two sides?

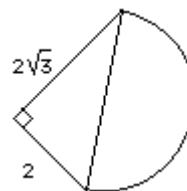
- I.  $2, \sqrt{5}$
  - II.  $1, \sqrt{2}$
  - III.  $2, 3$
- (A) I only
  - (B) II only
  - (C) III only
  - (D) I and II only
  - (E) I, II, and III

## Studyguide for the SAT Skill Quiz A: Pythagorean Theorem

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### Question 3

In the figure shown, the radius of the semicircle is



- (A)  $4\pi$
- (B) 4
- (C)  $2\sqrt{2}$
- (D) 2
- (E) 1

### Question 4

Which of the given lengths below could represent the sides of a right triangle?

- (A) 6; 8; 9
- (B) 5; 5;  $5\sqrt{2}$
- (C) 5; 6; 7
- (D) 3; 3;  $3\sqrt{3}$
- (E) All of the above

### Question 5

The diagonal of a square has a length of 5. Find the length of a side of the square.

- (A) 25
- (B)  $5\sqrt{2}$
- (C) 5
- (D)  $\frac{5\sqrt{2}}{2}$
- (E)  $\frac{5}{2}$



## Studyguide for the SAT Skill Quiz A: Pythagorean Theorem

### Question 6

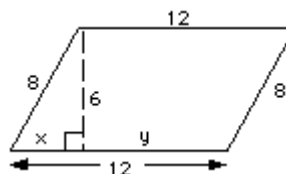
The sides of a square are 8 centimeters long. Find the length of a diagonal of the square.

- (A)  $2\sqrt{8}$
- (B) 8
- (C)  $8\sqrt{2}$
- (D) 16
- (E) 24

### Question 7

In the figure shown, find  $y$ .

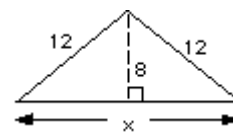
- (A) 4
- (B)  $2\sqrt{7}$
- (C) 8
- (D)  $12 - 2\sqrt{7}$
- (E) 12



### Question 8

What is  $x$  in the figure shown?

- (A) 4
- (B)  $4\sqrt{5}$
- (C)  $8\sqrt{5}$
- (D) 8
- (E) 12



## Studyguide for the SAT Skill Quiz A: Pythagorean Theorem

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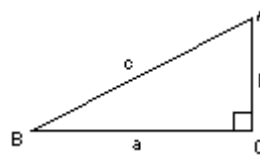
### Question 9

Find the length of an altitude in an equilateral triangle each of whose sides is 8.

- (A) 4
- (B) 6
- (C)  $4\sqrt{3}$
- (D)  $8\sqrt{3}$
- (E) 16

### Question 10

In the figure shown, hypotenuse  $c = 10\sqrt{2}$  and side  $b = 5\sqrt{3}$ . Find the length of side  $a$ .

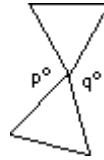


- (A) 5
- (B)  $5\sqrt{5}$
- (C) 10
- (D)  $5\sqrt{3}$
- (E) 15



### Question 1

In the figure shown, two equilateral triangles have a common vertex.  
Find  $p+q$ .



- (A) 90
- (B) 120
- (C) 180
- (D) 240
- (E) 360

### Question 2

In  $\triangle XYZ$  (not shown), if two sides have lengths of 2 and 3, which of the following cannot be the length of the third side?

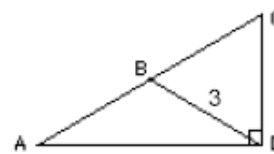
- (A) 1.5
- (B) 2
- (C) 3
- (D) 4
- (E) 5

## Studyguide for the SAT Skill Quiz A: Special Triangles

### Question 3

In the figure shown, if  $\triangle BCD$  is equilateral, what is the length of  $AB$ ?

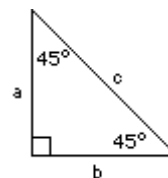
- (A)  $\frac{\sqrt{3}}{2}$
- (B)  $\sqrt{3}$
- (C) 3
- (D)  $2\sqrt{3}$
- (E)  $3\sqrt{2}$



### Question 4

In the figure shown, if  $a = 10$ , find  $c$ .

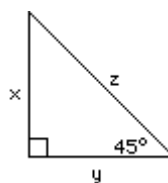
- (A) 5
- (B)  $5\sqrt{2}$
- (C) 10
- (D)  $10\sqrt{2}$
- (E) 20



### Question 5

In the figure shown, if  $z = \sqrt{6}$ ,  $x =$

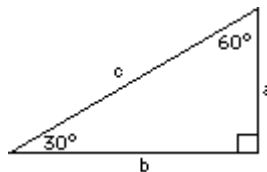
- (A)  $\frac{\sqrt{6}}{2}$
- (B)  $\sqrt{3}$
- (C)  $\sqrt{6}$
- (D)  $2\sqrt{3}$
- (E)  $3\sqrt{2}$



## Question 6

In the figure shown, if  $a = 6\sqrt{3}$ , then  $c =$

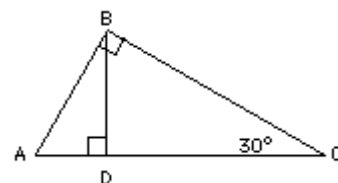
- (A) 6
- (B)  $6\sqrt{3}$
- (C) 12
- (D)  $12\sqrt{3}$
- (E) 18



## Question 7

In the figure shown, if  $AB = 8$ , find  $AD$ .

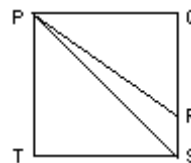
- (A) 4
- (B)  $4\sqrt{2}$
- (C) 6
- (D)  $8\sqrt{2}$
- (E) 16



## Question 8

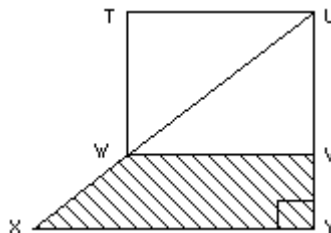
In the figure shown, PQST is a square. If  $PR = 5$  and  $QR = 3$ , then  $PS =$

- (A)  $\sqrt{2}$
- (B)  $\sqrt{3}$
- (C)  $2\sqrt{2}$
- (D) 4
- (E)  $4\sqrt{2}$



## Question 9

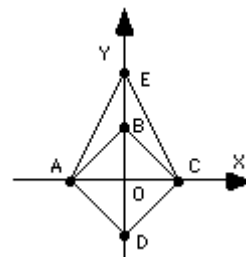
In the figure shown, right triangle XUY overlaps square TUVW as shown. If  $TU = 2$  and  $XY = UY = 3$ , what is the area of the shaded region VWXY?



- (A) 2
- (B) 2.5
- (C) 3
- (D) 4
- (E) 4.5

## Question 10

In square ABCD shown, the coordinates of A and C respectively are  $(-4, 0)$  and  $(4, 0)$ . If the area of  $\triangle AEC$  equals the area of square ABCD, what are the coordinates of E?



- (A)  $(0, 4)$
- (B)  $(0, 4\sqrt{2})$
- (C)  $(0, 8)$
- (D)  $(4\sqrt{2}, 0)$
- (E)  $(8, 0)$

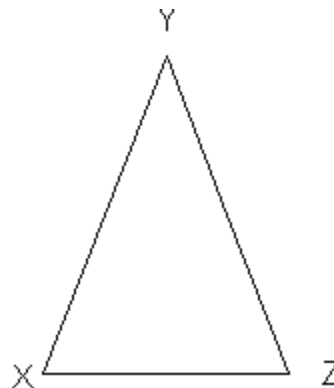


## Question 1

Figure not drawn to scale.

In the triangle above  $XY = YZ$ ,  $XZ = 10$  and  $\angle Y = 60^\circ$ .  
What is the length of  $XY$ ?

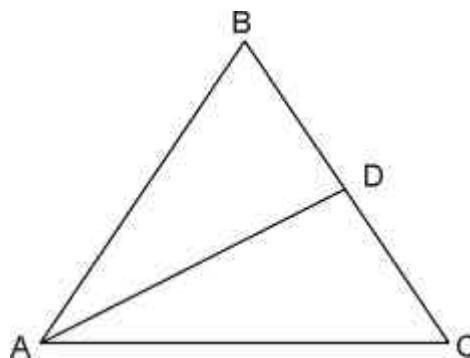
- (A) 5
- (B)  $5\sqrt{3}$
- (C) 10
- (D)  $10\sqrt{2}$
- (E)  $10\sqrt{3}$



## Question 2

In the equilateral triangle shown,  
 $AD \perp BC$  and  $AC = 6$ .  
What is the value of  $AD$ ?

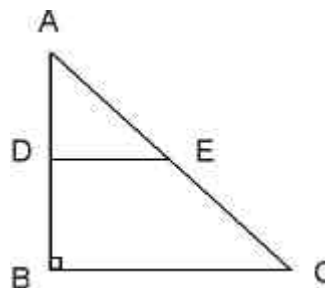
- (A) 3
- (B)  $3\sqrt{2}$
- (C)  $3\sqrt{3}$
- (D) 4
- (E) 6



## Question 3

In the right triangle ABC shown,  
 $DE$  is parallel to  $BC$ . If  $BC = 6$ ,  $DE = 3$  and  
 $AC = 8$ , what is the value of  $AE$ ?

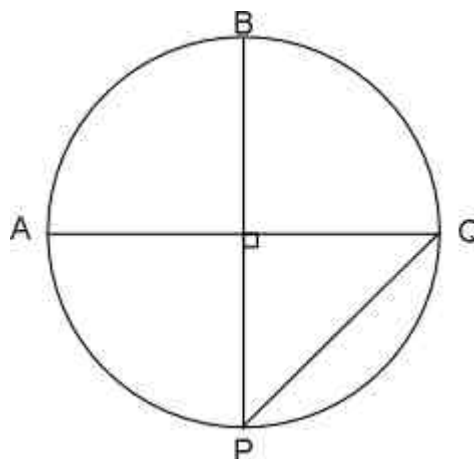
- (A)  $\frac{1}{2}$
- (B) 2
- (C) 3
- (D) 4
- (E) 5



### Question 4

In the circle shown  $AQ$  and  $BP$  are diameters and intersect at center  $O$ .  
(Center not labeled.)  
If  $AQ = 8$ , what is the length of chord  $PQ$ ?

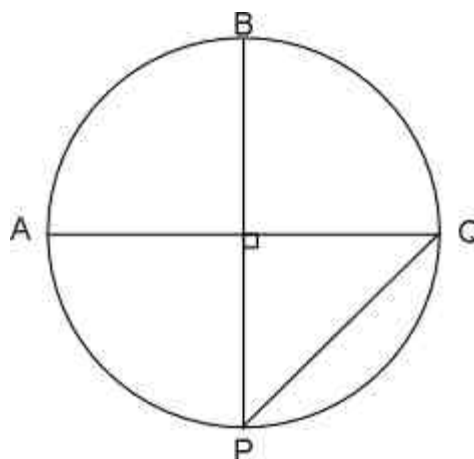
- (A) 2
- (B)  $2\sqrt{2}$
- (C) 4
- (D)  $4\sqrt{2}$
- (E) 6



### Question 5

In the circle shown  $AQ$  and  $BP$  are diameters and intersect at center  $O$ .  
(Center not labeled.)  
If  $AQ = 8$ , what is the area of  $\triangle OPQ$ ?

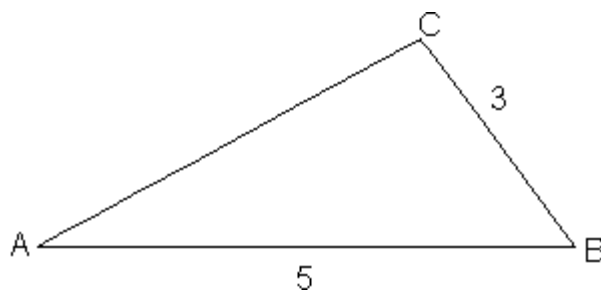
- (A) 2
- (B)  $4\sqrt{2}$
- (C) 6
- (D) 8
- (E) 16



### Question 6

In triangle  $ABC$  shown  $\angle C = 90^\circ$ ,  
 $AB = 5$  and  $CB = 3$ .  
What is the area of triangle  $ABC$ ?

- (A) 3
- (B) 4
- (C) 5
- (D) 6
- (E) 7.5

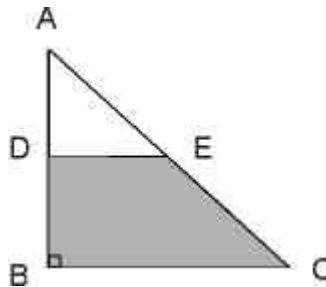




## Question 7

In the right triangle above,  $DE \parallel BC$ .  
If  $BC = 9$ ,  $DE = 6$  and  $AB = 12$ , what is the area of the shaded portion?  
Figure not drawn to scale.

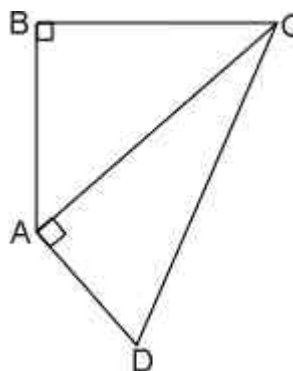
- (A) 12
- (B) 18
- (C) 24
- (D) 30
- (E) 36



## Question 8

In the figure shown, triangle ABC and triangle DAC are isosceles right triangles.  
If  $BC = 4$ , what is the length of  $CD$ ?  
Figure not drawn to scale.

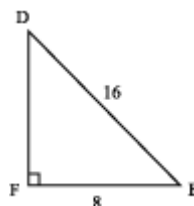
- (A) 6
- (B)  $4\sqrt{2}$
- (C)  $4\sqrt{3}$
- (D) 8
- (E)  $8\sqrt{2}$



## Question 9

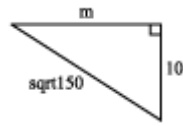
Given that  $\triangle ABC$  is similar to  $\triangle DEF$ , what is the length of  $AC$ ?

- (A) 2
- (B)  $4\sqrt{3}$
- (C) 8
- (D)  $12\sqrt{7}$
- (E) 32



### Question 10

For the right triangle,  
what is the value of side  $m$ ?

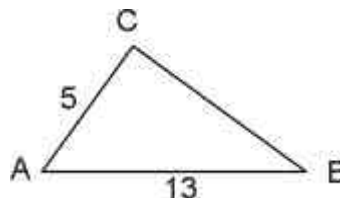


- (A)  $2\sqrt{35}$
- (B)  $5\sqrt{10}$
- (C)  $50$
- (D)  $5\sqrt{2}$
- (E)  $140$



### Question 1

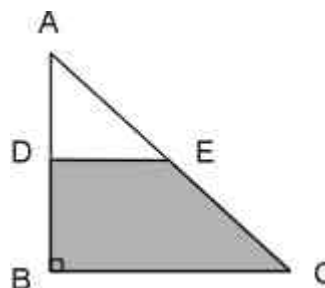
In the figure shown,  $\angle C = 90^\circ$ ,  
what is the area of triangle ABC?



- (A) 65
- (B) 60
- (C) 32.5
- (D) 30
- (E) 15

### Question 2

In the right triangle above,  $DE \parallel BC$ .  
If  $AB = 8$ ,  $AD = 4$  and  $BC = 10$ , what is  
the area of the shaded portion?  
Figure not drawn to scale.



- (A) 10
- (B) 20
- (C) 30
- (D) 40
- (E) 50

### Question 3

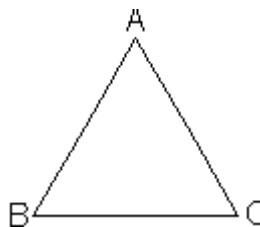
In triangle ABC (not shown), if two sides have a length of 2 and 3 respectively,  
which of the following cannot be the length of the third side?

- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) 4.5

### Question 4

Triangle ABC is an equilateral triangle.  
If  $AB = 8$ , what is the area of  $\triangle ABC$ ?

- (A) 8
- (B)  $8\sqrt{3}$
- (C) 16
- (D)  $16\sqrt{3}$
- (E)  $32\sqrt{3}$

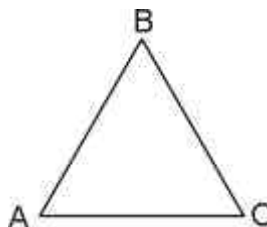


### Question 5

Figure not drawn to scale.

In triangle ABC,  $AB > BC$  and  $BC > AC$ ,  
which of the following is true?

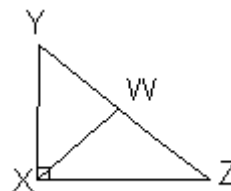
- (A)  $\angle A > \angle C$
- (B)  $\angle B > \angle C$
- (C)  $\angle A = \angle B$
- (D)  $\angle C > \angle B$
- (E)  $\angle C = \angle A$



### Question 6

In the figure shown above,  
if  $\triangle WXY$  is equilateral and  $XW = 3$ ,  
what is the length of  $WZ$ ?

- (A) 3
- (B)  $3\sqrt{2}$
- (C)  $3\sqrt{3}$
- (D) 6
- (E) 9



## Studyguide for the SAT Skill Quiz C: Special Triangles

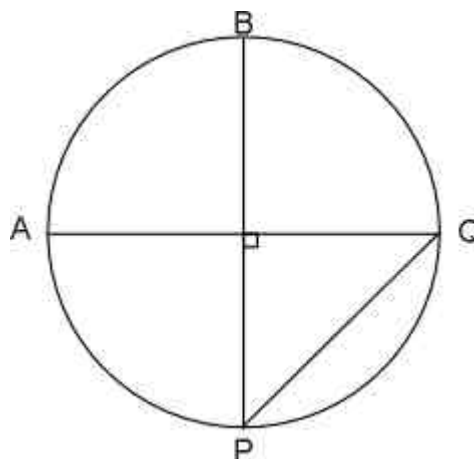
### Question 7

In the circle above  $AQ$  and  $BP$  are diameters and intersect at center  $O$ .

(Center not labeled.)

If  $AQ = 12$ , what is the length of chord  $PQ$ ?

- (A) 3
- (B) 6
- (C)  $6\sqrt{2}$
- (D)  $6\sqrt{3}$
- (E) 8



### Question 8

A  $30^\circ$ - $60^\circ$ - $90^\circ$  triangle has a hypotenuse that is 40 feet long. What is the length, in feet, of the shorter leg?

- (A) 4
- (B) 20
- (C)  $20\sqrt{2}$
- (D)  $20\sqrt{3}$
- (E) Cannot be determined from the information given.

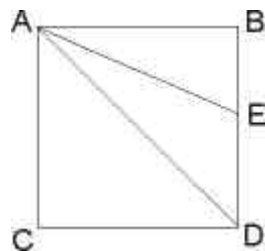
### Question 9

A  $45^\circ$ - $45^\circ$ - $90^\circ$  triangle has a leg that is 15 meters long. How long, in meters, is the hypotenuse?

- (A) 15
- (B) 30
- (C)  $15\sqrt{2}$
- (D)  $15\sqrt{3}$
- (E)  $30\sqrt{2}$

Grid-in your answer here:

Question 10



In the figure shown, ABCD is a square. If  $BE = 5$  and  $AE = 13$ , what is the area of  $\triangle AED$ ?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

# *Math Lesson #11*

## *Plane Geometry Plus*

- *Circles*
- *Area/Perimeter/Volume*

### *Triumph College Admissions*



***Skill Lesson***

***Quiz Time!***



***Hints!***



***Answers!***



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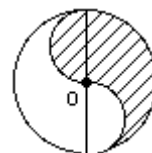






## Question 1

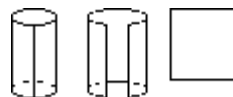
Two equal semicircles are drawn on a diameter of the circle with center O as shown. If the radius of circle O (the larger circle) is 6, then the area of the shaded region is



- (A)  $3\pi$
- (B)  $6\pi$
- (C)  $12\pi$
- (D)  $18\pi$
- (E)  $36\pi$

## Question 2

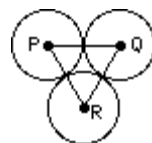
In the figure shown, a cylindrical tube with height of 6 inches and circumference of  $2\pi$  is cut and flattened into a rectangle. What is the area of the rectangle that is formed?



- (A) 12
- (B)  $6\pi$
- (C)  $12\pi^2$
- (D)  $12\pi^2$
- (E)  $24\pi^2$

## Question 3

In the figure shown, 3 circles of equal size with centers P, Q, and R touch in 3 points as shown. If the area of each circle is 1, what is the perimeter of  $\triangle PQR$ ?

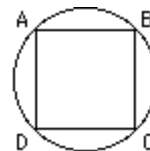


- (A)  $6\pi$
- (B) 6
- (C)  $\frac{6\sqrt{\pi}}{\pi}$

- (D)  $\frac{6}{\pi}$
- (E)  $\sqrt{\frac{6}{\pi}}$

## Question 4

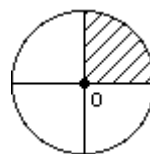
In the figure shown, each corner of a square with 4-inch sides touches the circle. What is the area of the circle?



- (A)  $4\pi$
- (B)  $8\pi$
- (C)  $8\sqrt{2}\pi$
- (D)  $16\pi$
- (E)  $32\pi$

## Question 5

The circle shown with center O is divided into 4 equal regions. If the area of the circle is  $16\pi$ , what is the perimeter of the shaded region?



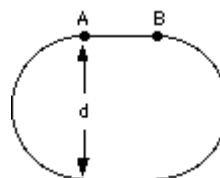
- (A)  $32 + 16\pi$
- (B)  $4 + 16\pi$
- (C)  $2 + 16\pi$
- (D)  $8 + 2\pi$
- (E)  $2\pi$

## Question 6

The figure shown is two semicircles of diameter  $d$  connected by segment AB.

If the length of AB is  $\frac{1}{2}$  of  $d$ , and

$d = 4$ , what is the total length of the figure?

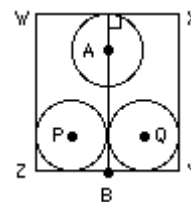


- (A)  $2\pi$
- (B)  $2\pi + 2$
- (C)  $4\pi$
- (D)  $4\pi + 1$
- (E)  $4\pi + 2$

## Studyguide for the SAT Skill Quiz A: Circles

### Question 7

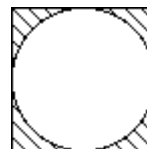
Three circles with centers A, P, and Q are shown in the figure. If the area of each circle is  $4\pi$  and the distance from A to B is 7, what is the area of rectangle WXYZ?



- (A) 88
- (B) 72
- (C) 64
- (D) 56
- (E) 48

### Question 8

A farmer plants only the circular center of a square field, as shown in the figure. What fraction of the total field is unplanted (the shaded area)?



- (A)  $4 - \pi$
- (B)  $\frac{\pi}{4}$
- (C)  $\frac{1}{\pi}$
- (D)  $\frac{1}{4}$
- (E)  $1 - \frac{\pi}{4}$

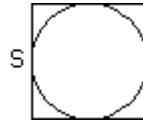
### Question 9

A large circular pizza is 13 inches in diameter. A medium circular pizza is 10 inches in diameter. What percent larger is the area of the large pizza than the area of the medium pizza?

- (A) 10
- (B) 20
- (C) 31
- (D) 69
- (E) 100

### Question 10

A circle with area 16 is inscribed in a square with side  $s$ .  
What is the value of  $s$ ?



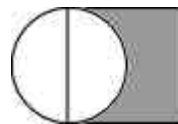
- (A)  $2\sqrt{\pi/\pi}$
- (B) 8
- (C)  $4\sqrt{\pi/\pi}$
- (D)  $16/\pi$
- (E)  $8\sqrt{\pi/\pi}$



## Question 1

In the figure shown, WX is the diameter of the circle with length 4 and a side of square XYZW.

What is the area of the shaded portion?



- (A)  $16 - 4\pi$
- (B)  $16 - 2\pi$
- (C) 16
- (D)  $16 + 2\pi$
- (E)  $16 + 4\pi$

## Question 2

The figure shown consists of an isosceles triangle and 10 semicircles each having the same diameter.

If the perimeter of the triangle is 60, what is the radius of each of the circles?

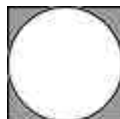


- (A) 2
- (B) 3
- (C) 4
- (D) 5
- (E) 6

## Question 3

In the figure shown, circle O with radius 4 is inscribed in square ABCD.

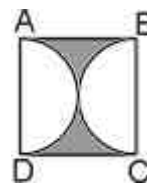
What is the area of the shaded portion?



- (A)  $16 - 8\pi$
- (B)  $16 - 2\pi$
- (C)  $64 - 16\pi$
- (D) 16
- (E)  $64 - 8\pi$

### Question 4

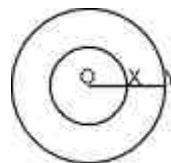
In the figure shown, two semicircles are tangent inside square ABCD. If a side of the square is 6, what is the area of the shaded portion?



- (A)  $36 - 6\pi$
- (B)  $36 - 3\pi$
- (C)  $36 - 9\pi$
- (D)  $36 + 9\pi$
- (E)  $9\pi - 36$

### Question 5

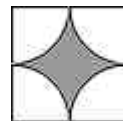
In the figure shown, both circles have their center at O and point X lies on OY. If  $OX = 4$  and  $XY = 2$ , what is the ratio of the area of the smaller circle to the area of the larger circle?



- (A)  $1/4$
- (B)  $1/3$
- (C)  $4/9$
- (D)  $1/2$
- (E)  $2/3$

### Question 6

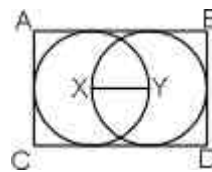
In the figure shown, four quarter-circles of equal radii are drawn inside a square with side 10. What is the area of the shaded region?



- (A) 100
- (B)  $25\pi - 100$
- (C)  $100 - 10\pi$
- (D)  $100 - 25\pi$
- (E)  $100 - 50\pi$

### Question 7

In the figure shown, two circles are inscribed inside rectangle ABCD. The centers of the circles are X and Y, respectively. If each circle has an area of 8, what is the area of rectangle ABCD?



- (A) 16
- (B)  $16 + 8/\pi$
- (C)  $32/\pi$
- (D)  $40/\pi$
- (E)  $48/\pi$

### Question 8

In the (x, y) coordinate plane, what is the radius of the circle  $(x - 5)^2 + (y + 3)^2 = 10$ ?

- (A) 3
- (B)  $\sqrt{10}$
- (C) 5
- (D) 10
- (E) 100

### Question 9

Which of the following equations represents a circle with a radius of 6?

- (A)  $(x - 6)^2 + (y - 1)^2 = 1$
- (B)  $(x + 6)^2 + (y + 6)^2 = 4$
- (C)  $(x - 3)^2 + (y - 2)^2 = 6$
- (D)  $(x + 5)^2 + y^2 = 36$
- (E)  $(x + 2)^2 + (y - 6)^2 =$

### Question 10

In the  $(x, y)$  coordinate plane, what is the center of the circle  $(x - 1)^2 + (y - 2)^2 = 9$ ?

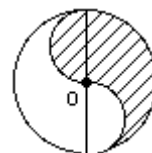
- (A)  $(-1, -2)$
- (B)  $(-1, 9)$
- (C)  $(0, 0)$
- (D)  $(3, -2)$
- (E)  $(1, 2)$





## Question 1

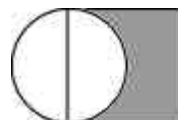
Two equal semicircles are drawn on a diameter of the circle with center O as shown. If the radius of circle O (the larger circle) is 2, then the area of the shaded region is



- (A)  $\pi$
- (B)  $2\pi$
- (C)  $3\pi$
- (D)  $4\pi$
- (E)  $6\pi$

## Question 2

In the figure shown, WX is the diameter of the circle with length 6 and a side of square XYZW.

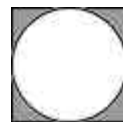


What is the area of the shaded portion?

- (A)  $36 - 9\pi$
- (B)  $36 - 6\pi$
- (C)  $36 - 9\pi/2$
- (D)  $36 - 3\pi$
- (E)  $9\pi - 24$

## Question 3

In the figure shown, a circle with radius 2 is inscribed in square.



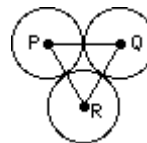
What is the area of the shaded portion?

- (A)  $4 - \pi$
- (B)  $4 - 2\pi$
- (C)  $16 - 4\pi$
- (D)  $16 - 2\pi$
- (E) 16

# Studyguide for the SAT Skill Quiz C: Circles

## Question 4

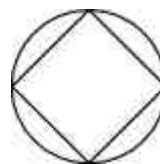
In the figure shown, three circles of equal size with centers P, Q, and R touch in three points as shown. If the area of each circle is  $9\pi$ , what is the perimeter of  $\triangle PQR$ ?



- (A) 3
- (B) 6
- (C) 9
- (D) 12
- (E) 18

## Question 5

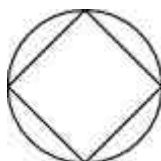
In the figure shown, a square is inscribed inside a circle. If the radius of the circle is 4, what is the area of the square?



- (A)  $32\sqrt{2}$
- (B) 32
- (C)  $16\sqrt{3}$
- (D)  $16\sqrt{2}$
- (E) 16

Grid-in your answer here:

## Question 6

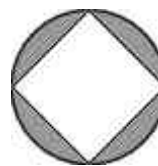


In the figure shown, a square with side of length  $3\sqrt{2}$  is inscribed in a circle. If the area of the circle is  $n\pi$ , what is the exact value of  $n$ ?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

## Question 7

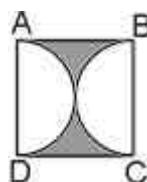
In the figure shown, a square is inscribed inside a circle. If the radius of the circle is 4, what is the area of the shaded portion?



- (A)  $4\pi - 8$
- (B)  $16\pi - 32$
- (C)  $32 - 4\pi$
- (D)  $16\pi - 16$
- (E)  $64\pi - 32$

## Question 8

In the figure shown, two semicircles are tangent inside square ABCD. If a side of the square is 4, what is the area of the shaded portion?



- (A)  $4 - \pi$
- (B)  $4 - 2\pi$
- (C)  $16 - 4\pi$
- (D)  $16 - 2\pi$
- (E) 16

Grid-in your answer here:

## Question 9



In the figure shown, a racetrack is formed by drawing a square and two semicircles. If a side of the square has length 4, what is the distance around the racetrack?  
Use  $\pi = 3.14$ .

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

### Question 10

The figure shown is a cylindrical tube with open top and bottom.

If the radius of the tube is 2 and the height of the tube is 3, what is the surface area of the tube?



- (A) 6
- (B)  $2\pi$
- (C) 12
- (D)  $4\pi$
- (E)  $12\pi$



### Question 1

A rectangle has perimeter 28 and length 8, what is the area of the rectangle?

- (A) 32
- (B) 40
- (C) 48
- (D) 90
- (E) 180

### Question 2

The area of a square is 100 square units. A rectangle whose length is 21 more than the width has the same area. What are the dimensions of the rectangle?

- (A) 25; 4
- (B) 25; 5
- (C) 20; 5
- (D) 10; 15
- (E) 3; 5

### Question 3

Joan has walked along 3 sides of a square park. If she has already walked 9 miles, how many miles must she walk to finish walking around the park?

- (A)  $\frac{1}{2}$
- (B) 1
- (C)  $1\frac{1}{2}$
- (D) 2
- (E) 3

### Question 4

The perimeter of a rectangle is 72 feet. The length is 6 more than twice the width. Find the length of the rectangle.

- (A) 20
- (B) 24
- (C) 26
- (D) 28
- (E) 30

### Question 5

The length of a rectangle exceeds the width by 4 inches. If the length is increased by 8 inches and width is decreased by 2, then the area of the new rectangle formed is 147 square inches. Find the length and width of the original rectangle.

- (A) 10; 4
- (B) 12; 4
- (C) 9; 4
- (D) 21; 7
- (E) 13; 9

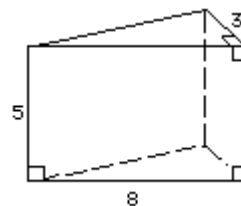
### Question 6

The length of a rectangle is 4 less than 3 times the width. If the perimeter is 56 inches, what is the area of the rectangle?

- (A) 48
- (B) 80
- (C) 160
- (D) 224
- (E) 615

### Question 7

In the figure shown, a wedge has been cut from a rectangular solid. What is the volume of the wedge shown?



- (A) 120
- (B) 60
- (C) 30
- (D) 24
- (E) 15

### Question 8

The volume of a rectangular solid is 96. If the length and height of the solid are both 4, what is the width of the solid?

- (A) 4
- (B) 5
- (C) 6
- (D) 8
- (E) 12

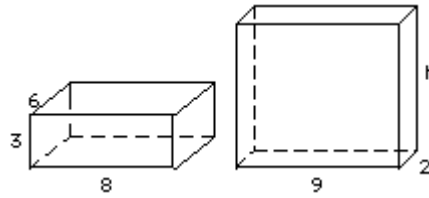
### Question 9

Find the volume of a rectangular solid whose base is a square with a side of 6 and whose height is 8.

- (A) 36
- (B) 48
- (C) 216
- (D) 288
- (E) 384

### Question 10

The two boxes in the figure shown have equal volume. Find the height  $h$  of the taller box.



- (A) 4
- (B) 6
- (C) 8
- (D) 12
- (E) 16



# *Math Lesson #12*

## *Coordinate Geometry*

- *Coordinate Axes*
- *Equations of Lines*
- *Parallel and Perpendicular Lines*
- *Systems of Equations*

### *Triumph College Admissions*

 **Skill Lesson**

**Quiz Time!**   
☐ A ☐ B ☐ C ☒ D ☐ E

**Hints!**   
☐ A ☐ B ☐ C ☒ D ☐ E

**Answers!**   
☐ A ☐ B ☐ C ☒ D ☐ E

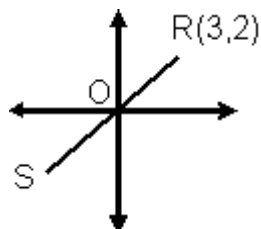
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## Question 1

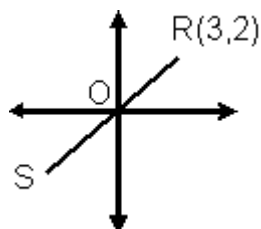
In the figure shown,  
if RS is a line segment  
and  $OR = OS$ ,  
what are the  
coordinates of point S?



- (A) (-3, 2)
- (B) (-3, -2)
- (C) (-2, -3)
- (D) (-2, 3)
- (E) (2, 3)

## Question 2

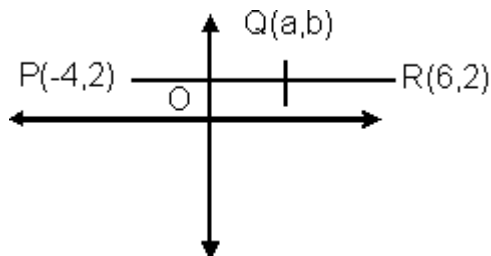
In the figure shown,  
if RS is a line segment and  $OR = OS$ ,  
what is the length of line segment RS?



- (A)  $2\sqrt{5}$
- (B)  $2\sqrt{11}$
- (C)  $2\sqrt{13}$
- (D) 10
- (E) 26

## Question 3

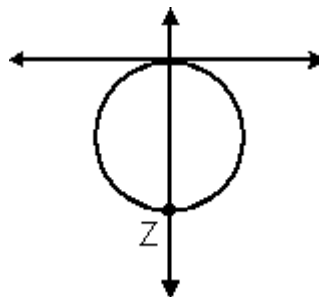
In the figure shown,  
if  $PQ = QR$ ,  
what is the value of a?



- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) 5

### Question 4

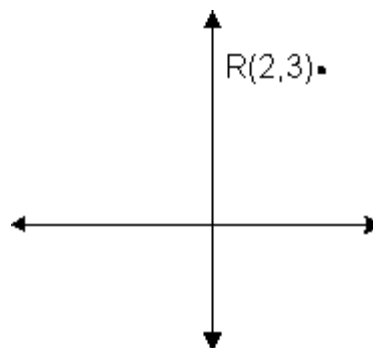
In the figure shown,  
the circle with center  $C$  has  
radius 4 and is tangent to  
the origin.  
What are the coordinates of point  $Z$ ?



- (A)  $(-8, 0)$
- (B)  $(-4, 0)$
- (C)  $(-4, 4)$
- (D)  $(0, -4)$
- (E)  $(0, -8)$

### Question 5

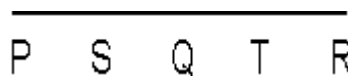
In the figure shown, a line is to  
be drawn through  $R$  in such a way that it  
never crosses the  $y$ -axis.  
Through which of the following  
points must the line pass?



- (A)  $(5, 3)$
- (B)  $(-2, 3)$
- (C)  $(4, 3)$
- (D)  $(7, 10)$
- (E)  $(2, -7)$

### Question 6

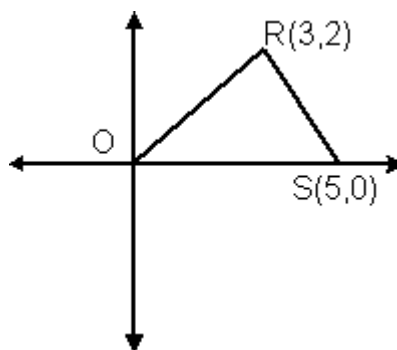
In the figure shown,  $Q$  is the midpoint  
of line segment  $PR$ , and  $S$  and  $T$  are  
midpoints of  $PQ$  and  $QR$ , respectively.  
If the length of  $ST$  is 6, what is the  
length of  $PR$ ?



- (A) 3
- (B) 6
- (C) 9
- (D) 12
- (E) 24

## Question 7

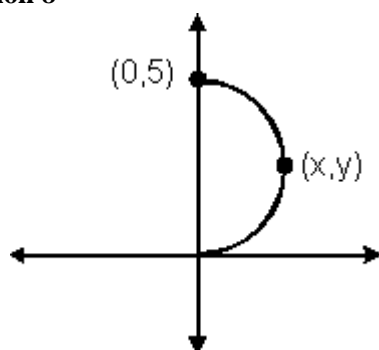
In the figure shown,  
what is the area of triangle RSO?



- (A) 2
- (B) 3
- (C) 5
- (D) 10
- (E) 11

Grid-in your answer here:

## Question 8

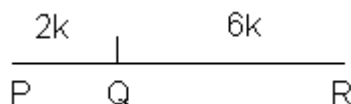


In the figure shown, what is the x-coordinate of the point on the semicircle that is farthest from the y-axis?

	/	/	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

## Question 9

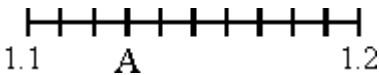


In the figure shown, if segment PR has a length of 2, what is the value of k?

	/	/	
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

Question 10



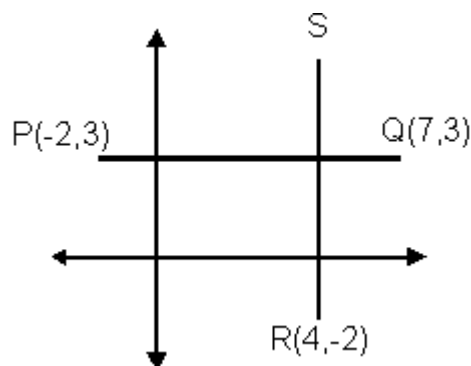
In the figure shown, what is the value of A?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9



### Question 1

In the figure shown,  
the coordinates of points  
P, Q, and R are shown.  
If  $PQ = RS$  and  $PQ \perp RS$ ,  
what are the coordinates of S?



- (A) (2, 7)
- (B) (4, 7)
- (C) (4, 8)
- (D) (4, 9)
- (E) (7, 4)

### Question 2

Points A, B, and C are collinear and  $AC = BC$ . If the coordinates of A are (7, 2) and the coordinates of B are (3, 6), what are the coordinates of C?

- (A) (2, 2)
- (B) (-4, 4)
- (C) (4, 4)
- (D) (4, -4)
- (E) (5, 4)

### Question 3

Given A is (4, 7) and B is (7, 4), what is the length of AB?

- (A)  $2\sqrt{3}$
- (B)  $3\sqrt{2}$
- (C) 6
- (D) 9
- (E) 18

### Question 4

Point R (4, 5) is the midpoint of line segment XY. If the coordinates of X are (3, 2), what are the coordinates of Y?

- (A) (5, 8)
- (B) (7, 7)
- (C) (1, 3)
- (D) (-1, -3)
- (E) (-5, 8)

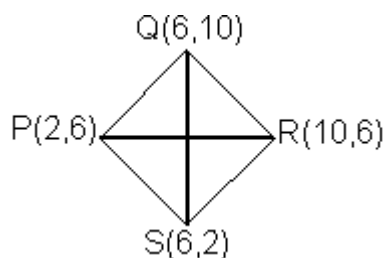
### Question 5

On a rectangular coordinate graph, the distance from the origin to (5, 0) would be the same distance as the distance from the origin to which of the following points listed?

- I. (0, 5)
  - II. (3, 2)
  - III. (-5, 0)
- 
- (A) I only
  - (B) II only
  - (C) III only
  - (D) I and III only
  - (E) I, II, and III

### Question 6

In the figure shown, the coordinates of the diagonals of a square are shown. What is the area of square PQRS?



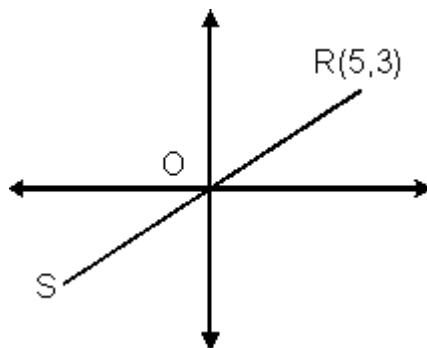
- (A)  $4\sqrt{2}$
- (B) 8
- (C)  $16\sqrt{2}$
- (D) 32
- (E)  $32\sqrt{2}$



### Question 7

In the figure shown,  
if RS is a line segment and  $OR = OS$ ,  
what are the  
coordinates of point S?

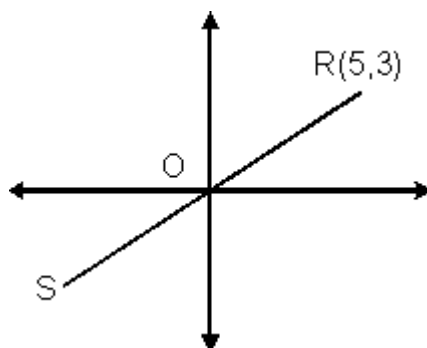
- (A)  $(-5, 3)$
- (B)  $(-5, -3)$
- (C)  $(-3, -5)$
- (D)  $(-3, 5)$
- (E)  $(3, 5)$



### Question 8

In the figure shown,  
if RS is a line segment and  $OR = OS$ ,  
what is the length of line segment RS?

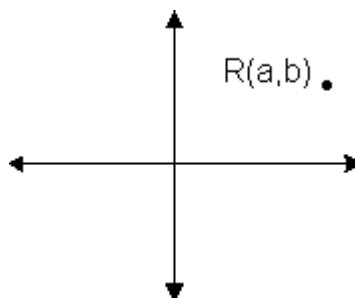
- (A)  $4\sqrt{2}$
- (B) 8
- (C)  $2\sqrt{34}$
- (D) 16
- (E) 68



### Question 9

In the figure shown,  
a line is to be drawn through  
R in such a way that it never  
crosses the y-axis.  
Through which of the following points  
must the line pass ?

- (A)  $(a, -b)$
- (B)  $(-a, b)$
- (C)  $(-a, 0)$
- (D)  $(b, a)$
- (E)  $(b, -a)$



### Question 10



In the figure shown, Q is the midpoint of line segment PR, and S and T are midpoints of PQ and QR, respectively. If the length of ST is  $a$ , what is the length of PR?

- (A)  $a/2$
- (B)  $a$
- (C)  $3a/2$
- (D)  $2a$
- (E)  $3a$



### Question 1

What is the slope of the line with equation  $8x - 4y - 12 = 0$ ?

- (A) -8
- (B) -3
- (C) -2
- (D) 2
- (E) 3

### Question 2

What is the y-intercept of the line with equation  $5x - 2y = 8$ ?

- (A) -8
- (B) -4
- (C)  $\frac{5}{2}$
- (D) 4
- (E) 8

## Studyguide for the SAT Skill Quiz A: Equations of Lines

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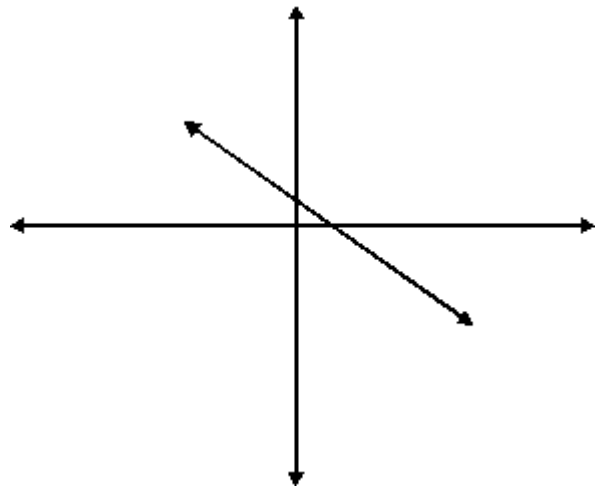
### Question 3

What is the slope of the line through the points  $(-1, 5)$  and  $(-3, -7)$ ?

- (A)  $-6$
- (B)  $\frac{1}{6}$
- (C)  $\frac{1}{3}$
- (D)  $3$
- (E)  $6$

### Question 4

Which of the following could be the slope of this line?



- (A)  $-2$
- (B)  $0$
- (C)  $1$
- (D)  $5$
- (E) No Slope

### Question 5

What is the slope of the line through the points  $(0, 5)$  and  $(2, 8)$ ?

- (A)  $\frac{-3}{2}$
- (B)  $\frac{-2}{3}$
- (C)  $\frac{2}{3}$
- (D)  $\frac{3}{2}$
- (E)  $4$

### Question 6

What is the equation of the line with slope 3 and point (1, -7)?

- (A)  $3x - y + 22 = 0$
- (B)  $3x - y - 10 = 0$
- (C)  $x - 3y - 4 = 0$
- (D)  $3x - y + 4 = 0$
- (E)  $x - 3y + 20 = 0$

### Question 7

What is the equation of the line through points (1, 2) and (3, 5)?

- (A)  $2x - 3y + 1 = 0$
- (B)  $3x - 2y + 3 = 0$
- (C)  $3x - 2y + 1 = 0$
- (D)  $3x - 2y - 7 = 0$
- (E)  $2x - 3y + 4 = 0$

### Question 8

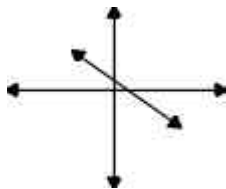
What is the equation of the line through the points (5, 1) and (2, 1)?

- (A)  $x = 1$
- (B)  $y = 1$
- (C)  $y = x + 1$
- (D)  $x + y - 1 = 0$
- (E) No Solution

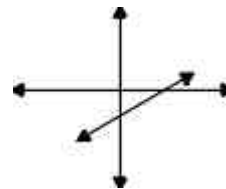
### Question 9

Which of the following lines could be the graph of the equation  $y = 2x + 1$ ?

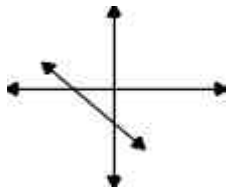
(A)



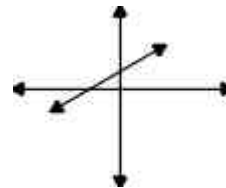
(D)



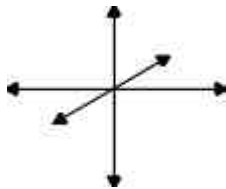
(B)



(E)



(C)



### Question 10

What is the slope of the line through the points  $(-3, 7)$  and  $(-5, 2)$ ?

(A)  $\frac{-5}{2}$

(B)  $\frac{-8}{5}$

(C)  $\frac{-2}{5}$

(D)  $\frac{2}{5}$

(E)  $\frac{5}{2}$



### Question 1

Which of the following lines has the largest slope?

- (A)  $y - 10 = 0$
- (B)  $y = 4x + 6$
- (C)  $2y = 5x - 20$
- (D)  $y = 15 + x$
- (E)  $4y = 12x$

### Question 2

In the standard  $(x, y)$  coordinate plane, what is the slope of the line  $3x - 2y = 18$ ?

- (A)  $-3$
- (B)  $-2$
- (C)  $-\frac{3}{2}$
- (D)  $\frac{3}{2}$
- (E)  $3$

### Question 3

In the standard  $(x, y)$  coordinate plane, what is the slope of the line  $8x + 2y = 10$ ?

- (A) -12
- (B) -4
- (C) 6
- (D) 8
- (E) 10

### Question 4

If the point  $(-2, b)$  lies on the line  $y = -4x + 8$ , then  $b = ?$

- (A) -2
- (B) 0
- (C) 2
- (D) 8
- (E) 16

### Question 5

If the point  $(x_1, 0)$  lies on the graph of  $y = \frac{1}{3}x + 6$ , then  $x_1 = ?$

- (A) -18
- (B) -3
- (C) 0
- (D) 3
- (E) 6



### Question 6

In slope-intercept form, what is the equation of a line having slope of -3 and a y-intercept of 9?

(A)  $y = 9x - 3$

(B)  $y = -9x + 3$

(C)  $y = -3x + 9$

(D)  $y = 3x - 9$

(E)  $y = -\frac{1}{3}x$

### Question 7

What is the equation for the line having an undefined slope and passing through (4, 3)?

(A)  $y = 3$

(B)  $x = 4$

(C)  $y = x$

(D)  $y = \frac{4}{3}x$

(E)  $y = 4x + 3$

### Question 8

Which of the following points lies on the graph of  $2x - y = 8$ ?

(A) (0, 0)

(B) (1, 6)

(C) (2, -4)

(D) (6, 3)

(E) (4, 16)

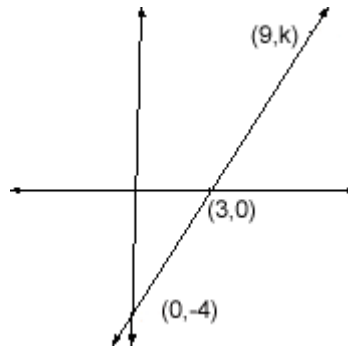
### Question 9

What is the equation for the line having a slope of 0 and a y-intercept of -5?

- (A)  $y = x - 5$
- (B)  $y = -5x$
- (C)  $y = x + 5$
- (D)  $y = -5$
- (E)  $x = 0$

### Question 10

The following line is graphed on a standard  $(x, y)$  coordinate plane. What is the value of  $k$ ?



- (A) 2
- (B) 4
- (C) 6
- (D) 8
- (E) 10



### Question 1

Which of the following ordered pairs satisfies the equation  $4x - 3y = 7$ ?

- (A) (1, 1)
- (B) (1, -1)
- (C) (-1, 1)
- (D) (-1, -1)
- (E) (0, 7)

### Question 2

What is the y-intercept of the graph of  $2x + 5y = 20$ ?

- (A) 2
- (B) 4
- (C) 5
- (D) 10
- (E) 20

### Question 3

Which of the following lines falls to the right?

- (A)  $3y = 2x$
- (B)  $y = -4$
- (C)  $x = 2$
- (D)  $2y - 4x = 8$
- (E)  $x + 5y = 10$

### Question 4

Which of the following lines rises to the right?

- (A)  $y = 10$
- (B)  $x + 9 = 0$
- (C)  $y = 5 - 3x$
- (D)  $x - y = 0$
- (E)  $x + 4y = 9$

### Question 5

What is the x-intercept of the graph of  $2x - y = 15$ ?

- (A) -15
- (B) -1
- (C) 2
- (D) 7.5
- (E) 15

### Question 6

Which of the following when graphed in a standard (x, y) coordinate plane does not graph a line?

- (A)  $xy = 1$
- (B)  $x + 4 = 6$
- (C)  $3y = 10 - 4x$
- (D)  $y - x = 0$
- (E)  $y + 8 = 0$

## Studyguide for the SAT Skill Quiz C: Equations of Lines

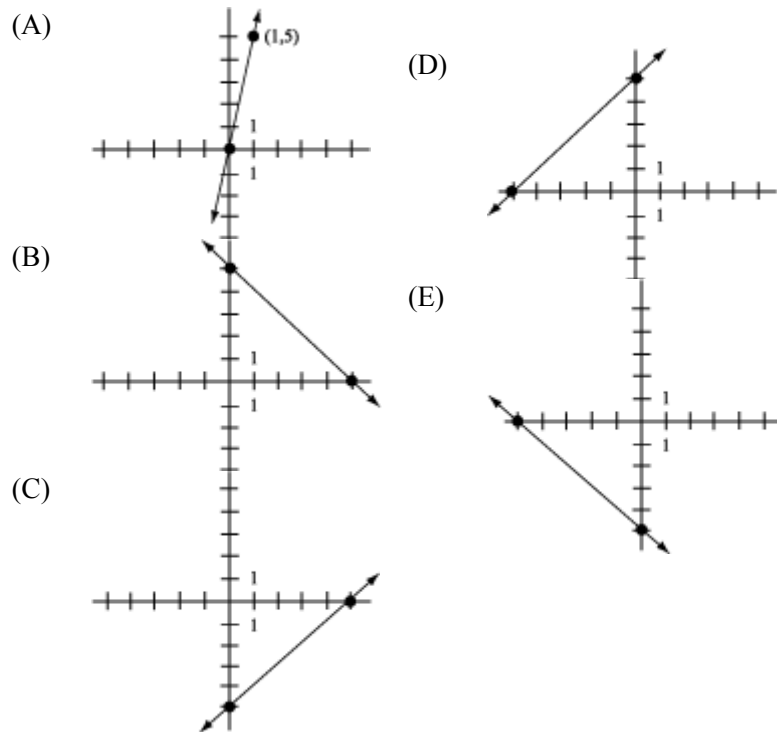
### Question 7

What is the x-intercept of the graph of  $y = 2x - 16$ ?

- (A) -16
- (B) -8
- (C) 8
- (D) 16
- (E) 32

### Question 8

Which of the following is the graph of the equation  $x + y = 5$ ?



## Studyguide for the SAT Skill Quiz C: Equations of Lines

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### Question 9

What is the equation for the line graphed on a standard (x, y) coordinate plane?

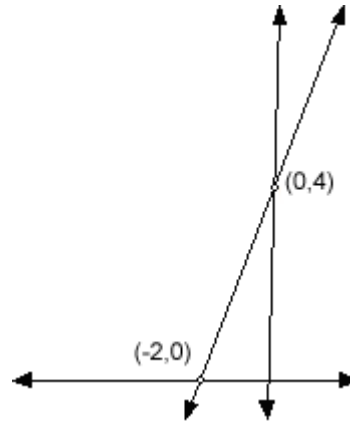
(A)  $y = -2x + 4$

(B)  $y = 4x - 2$

(C)  $y = 2x + 4$

(D)  $y = -4x + 2$

(E)  $y = \frac{1}{2}x + 4$



### Question 10

What is the equation of the line that has a y-intercept of -3 and passes through the point  $(-1, 5)$ ?

(A)  $y = -8x - 3$

(B)  $y = 8x + 5$

(C)  $y = \frac{5}{2}x - 3$

(D)  $y = \frac{1}{8}x - 1$

(E)  $y = -\frac{1}{8}x - 3$



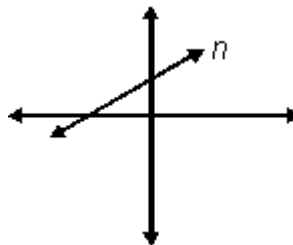
### Question 1

Which of the following equations represents a line that is parallel to the line with equation  $3x + 6y = 12$ ?

- (A)  $y = -3x + 5$
- (B)  $y = -2x + 1$
- (C)  $2y + x = 3$
- (D)  $2y = x - 8$
- (E)  $y = -x - \frac{1}{2}$

### Question 2

Which of the following could represent an equation of a line perpendicular to the graph of line  $n$ ?



- (A)  $y = x + 1$
- (B)  $y = 2x + 4$
- (C)  $y = 5$
- (D)  $y = -x + 2$
- (E)  $y = -10x + 2$

### Question 3

Which of the following equations is perpendicular to  $3x + 4y = 8$ ?

(A)  $6x + 8y = 24$

(B)  $4x - 3y = 9$

(C)  $8x + 6y = 18$

(D)  $3x - 4y = 12$

(E)  $4x + 3y = 1$

### Question 4

What is the slope of a line parallel to the line that passes through the points (1, 3) and (4, 8)?

(A)  $-\frac{5}{3}$

(B)  $-\frac{3}{5}$

(C)  $\frac{3}{5}$

(D)  $\frac{5}{3}$

(E) 7

### Question 5

What is the slope of the line perpendicular to the line with equation  $x = 2$ ?

(A) -2

(B) 0

(C) 1

(D) 2

(E) No Slope



### Question 6

The graphs of the equations  $6x + 4y = 8$  and  $6y = 9 - 9x$  have how many points in common?

- (A) 0
- (B) 1
- (C) 2
- (D) 3
- (E) Infinitely Many

### Question 7

Which of the following equations represents a line parallel to  $2x - 3y = 9$ ?

- (A)  $8x + 12y = 36$
- (B)  $4x - 12y = 18$
- (C)  $6x - 9y = 10$
- (D)  $3x - 2y = 6$
- (E)  $6x + 4y = 4$

### Question 8

The slope of a line  $l$  is  $m$  and the slope of a line  $n$ , perpendicular to  $l$ , is  $r$ . Which of the following is true?

I.  $m = \frac{1}{-r}$

II.  $m \times r = -1$

III.  $r = \frac{1}{-m}$

- (A) I only
- (B) II only
- (C) III only
- (D) I and II only
- (E) I, II, and III

### Question 9

Which of the following equations is perpendicular to  $y = 4$ ?

(A)  $y = -4$

(B)  $y = -\frac{1}{4}$

(C)  $x = y - 3$

(D)  $x = -2$

(E)  $y = \frac{1}{x}$

### Question 10

What is the equation of the line that passes through point  $(-1, 4)$  and that is perpendicular to the line with the equation  $3x - 4y = 5$ ?

(A)  $4x + 3y - 8 = 0$

(B)  $4x - 3y + 8 = 0$

(C)  $4x + 3y - 16 = 0$

(D)  $3x - 4y + 19 = 0$

(E)  $3x - 4y + 13 = 0$



### Question 1

In the standard (x, y) coordinate plane, what will the slope of any line perpendicular to  $x + 3y = 9$  be?

- (A) -3
- (B) -1
- (C)  $-\frac{1}{3}$
- (D) 1
- (E) 3

### Question 2

In the standard (x, y) coordinate plane, what will the slope of any line parallel to  $4x - 3y = 15$  be?

- (A) -4
- (B) -3
- (C)  $-\frac{4}{3}$
- (D)  $\frac{4}{3}$
- (E)  $-\frac{3}{4}$

### Question 3

Which of the following lines is perpendicular to the y-axis in a standard (x, y) coordinate plane?

- (A)  $x = 5$
- (B)  $y = -3$
- (C)  $y = x$
- (D)  $x - y = 1$
- (E)  $x + 3 = 0$

### Question 4

What is the slope of any line parallel to the y-axis in the standard (x, y) coordinate plane?

- (A)  $-1$
- (B)  $0$
- (C)  $\frac{1}{2}$
- (D)  $1$
- (E) undefined

### Question 5

What is the equation of the line that is parallel to  $5x - y = 9$  and has a y-intercept of 12?

- (A)  $y = 5x - 9$
- (B)  $y = -5x - 9$
- (C)  $y = 5x + 12$
- (D)  $y = -5x + 12$
- (E)  $y = -\frac{1}{5}x + 12$

### Question 6

What is the equation of the line that is perpendicular to  $y = -\frac{2}{3}x - 8$  and passes through the point (6, -3) ?

- (A)  $y = \frac{3}{2}x - 8$
- (B)  $y = \frac{3}{2}x - 12$
- (C)  $y = -\frac{3}{2}x + 6$
- (D)  $y = -\frac{2}{3}x + 1$
- (E)  $y = -\frac{2}{3}x - 3$

### Question 7

What is the equation of the line that is parallel to  $x + 4y = 12$  and passes through the point (8, 0)?

- (A)  $y = -\frac{1}{4}x + 8$
- (B)  $y = 4x + 8$
- (C)  $y = \frac{1}{4}x + 3$
- (D)  $y = -\frac{1}{4}x + 2$
- (E)  $y = 4x - 32$

### Question 8

What is the equation of the line that passes through the point (-1, -5) and is perpendicular to a line with undefined slope?

- (A)  $y = -5$
- (B)  $x = -1$
- (C)  $y = -x - 5$
- (D)  $y = \frac{1}{5}x$
- (E)  $y = 5x + 1$

### Question 9

Which of the following equations is parallel to  $5x - 4y = 0$ ?

- (A)  $y = \frac{5}{4}x$
- (B)  $y = \frac{5}{4}x - 8$
- (C)  $y = -\frac{5}{4}x + 1$
- (D)  $y = -\frac{4}{5}x$
- (E)  $y = -\frac{4}{5}x - 10$

### Question 10

If two lines are perpendicular and the lines are not vertical or horizontal, which of the following must be true?

- (A) The slopes of the two lines are the same.
- (B) The y-intercepts of the two lines are the same.
- (C) The slope of one line is undefined.
- (D) The slopes of the two lines have opposite signs.
- (E) The y-intercepts of the two lines are reciprocals of each other.



### Question 1

A line  $l_1$  passes through the points (4, 3) and (-1, 1). If a line  $l_2$  is parallel to  $l_1$  when graphed in the standard (x, y) coordinate plane, what is the slope of  $l_2$ ?

- (A)  $\frac{2}{3}$
- (B)  $-\frac{3}{2}$
- (C)  $\frac{2}{5}$
- (D)  $-\frac{5}{2}$
- (E)  $\frac{4}{3}$

### Question 2

If a system of two linear equations has no solution, which of the following must be true?

- (A) The two lines are parallel.
- (B) The two lines are perpendicular.
- (C) The two lines are coinciding.
- (D) The two lines are vertical.
- (E) One line is vertical and one line is horizontal.

## Studyguide for the SAT Skill Quiz C: Parallel and Perpendicular Lines

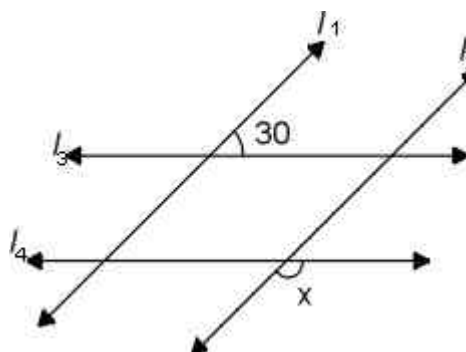
### Question 3

If a line passes through the points (4, -3) and (2, -1), then what is the slope of any line perpendicular to the given line?

- (A) 1
- (B)  $\frac{2}{3}$
- (C)  $-\frac{2}{3}$
- (D) -1
- (E) undefined

### Question 4

In the figure shown, lines  $l_1$  and  $l_2$  are parallel, and lines  $l_3$  and  $l_4$  are parallel. What is the measure of angle  $x$ ?



- (A)  $30^\circ$
- (B)  $60^\circ$
- (C)  $90^\circ$
- (D)  $130^\circ$
- (E)  $150^\circ$

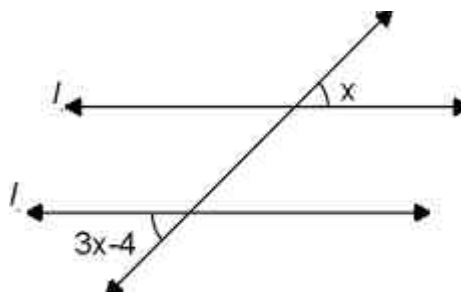


## Studyguide for the SAT Skill Quiz C: Parallel and Perpendicular Lines

### Question 5

In the figure shown, the lines are parallel.

What is the value of  $x$ ?

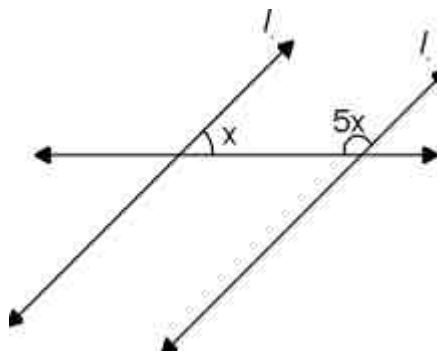


- (A) 0
- (B) 2
- (C) 23.5
- (D) 46
- (E) Cannot be determined from the information given.

### Question 6

In the figure shown, the lines are parallel.

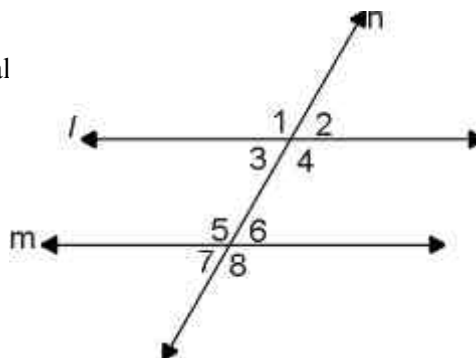
What is the value of  $x$ ?



- (A) 5
- (B) 15
- (C) 30
- (D) 90
- (E) cannot be determined from the information given

### Question 7

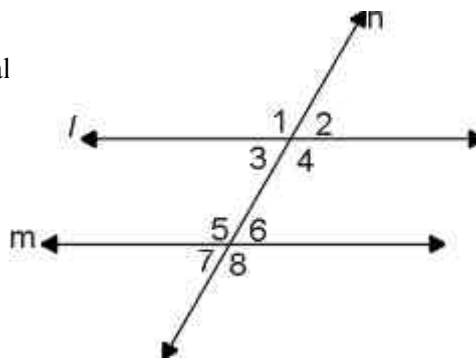
In the figure shown, lines  $l$  and  $m$  are parallel and cut by a transversal  $n$ . Which pair of angles must be congruent?



- (A)  $\angle 1$  and  $\angle 2$
- (B)  $\angle 2$  and  $\angle 4$
- (C)  $\angle 4$  and  $\angle 6$
- (D)  $\angle 3$  and  $\angle 7$
- (E)  $\angle 3$  and  $\angle 8$

### Question 8

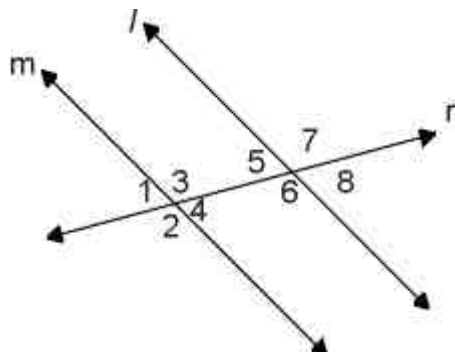
In the figure shown, lines  $l$  and  $m$  are parallel and cut by a non-perpendicular transversal  $n$ . Which pair of angles are supplementary?



- (A)  $\angle 1$  and  $\angle 4$
- (B)  $\angle 3$  and  $\angle 6$
- (C)  $\angle 4$  and  $\angle 6$
- (D)  $\angle 3$  and  $\angle 7$
- (E)  $\angle 1$  and  $\angle 8$

## Question 9

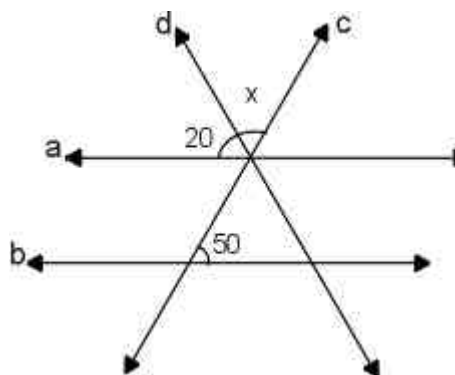
In the figure shown, lines  $l$  and  $m$  are cut by a transversal  $n$ . Which of the following statements would allow the conclusion that  $l$  and  $m$  are parallel to be drawn?



- (A)  $\angle 1 = \angle 4$
- (B)  $\angle 3 = \angle 5$
- (C)  $\angle 6 + \angle 8 = 180^\circ$
- (D)  $\angle 4 + \angle 6 = 180^\circ$
- (E)  $\angle 5 + \angle 7 = 180^\circ$

## Question 10

In the figure shown, lines  $a$  and  $b$  are parallel and cut by two transversals  $c$  and  $d$ . What is the measure of  $\angle x$ ?



- (A)  $20^\circ$
- (B)  $50^\circ$
- (C)  $70^\circ$
- (D)  $110^\circ$
- (E)  $160^\circ$





### Question 1

If  $2x + 3y = 17$  and  $3x + 4y = 24$ , then  $5x + 7y =$

- (A) -41
- (B) -7
- (C) 3
- (D) 7
- (E) 41

### Question 2

If  $7p + 5q = 2$  and  $8p - 9q = 17$ , then  $-p + 14q =$

- (A) -19
- (B) -15
- (C) 1
- (D) 15
- (E) 19

### Question 3

If  $x + y = -7$  and  $3x + y = -9$ , then  $2x + y =$

- (A) -8
- (B) -6
- (C) -1
- (D) 6
- (E) 16

### Question 4

If  $x - 3y = 0$  and  $5x - y = 14$ , then  $6x - 4y =$

- (A) -14
- (B) -7
- (C) -3
- (D) 1
- (E) 14

### Question 5

If  $m - n = 32$  and  $3m - 8n - 6 = 0$ , then  $4m - 9n =$

- (A) -8
- (B) 18
- (C) 26
- (D) 38
- (E) 50

### Question 6

If  $3a + 2b = 7$  and  $2a + 2b = 9$ , what is the value of  $\frac{5}{2}a + 2b$ ?

- (A) -8
- (B) 0
- (C) 5
- (D) 8
- (E) 14

### Question 7

If  $2x + 3y = 16$  and  $3x + 2y = 14$ , then  $5x + 5y = ?$

- (A) 2
- (B) 6
- (C) 20
- (D) 30
- (E) 60





# *Math Lesson #13*

## *Analyzing Information*

- *Tables/Charts/Graphs*
- *Modify or Label Diagram*
- *Draw a Diagram*
- *Averages*

### *Triumph College Admissions*

 **Skill Lesson**

**Quiz Time!**   
☐ A ☐ B ☐ C ☒ D ☐ E

**Hints!**   
☐ A ☐ B ☐ C ☒ D ☐ E

**Answers!**   
☐ A ☐ B ☐ C ☒ D ☐ E

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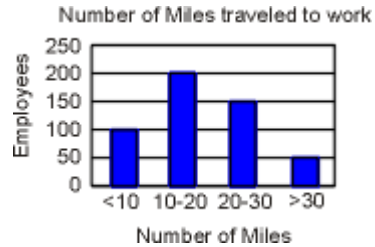




## Question 1

The chart shown represents the number of miles traveled to work by employees of company X.

What percent of employees travel 10 - 20 miles to work?



- (A) 200
- (B) 50
- (C) 40
- (D) 30
- (E) 25

## Question 2

Projected Phone Sales for Company A

Price of Phone	Projected # of Phones sold
\$200	20,000
\$150	50,000
\$100	120,000

Use the table above to answer this question.

Based on projection, how much more money would be received from sales of the phone when the price is \$100, than when the price is \$200?

- (A) 50,000
- (B) 70,000
- (C) 3,500,000
- (D) 4,000,000
- (E) 8,000,000

## Question 3

According to the graph shown, what was the percent increase in value from 1998 to 1999?

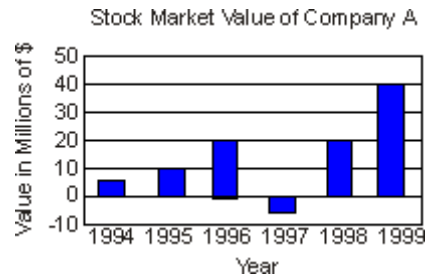


- (A) 50
- (B) 70
- (C) 90
- (D) 100
- (E) 200

## Studyguide for the SAT Skill Quiz A: Tables/Charts/Graphs

### Question 4

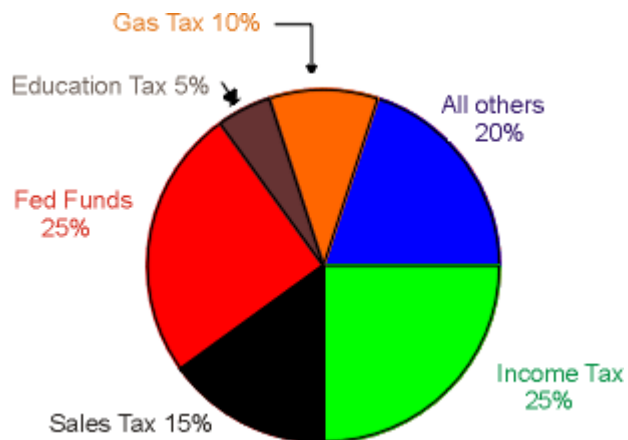
According to the graph shown, what would the value of company A be in the year 2000 to match the percent increase from 1998 to 1999?



- (A) 40
- (B) 50
- (C) 80
- (D) 100
- (E) 120

### Question 5

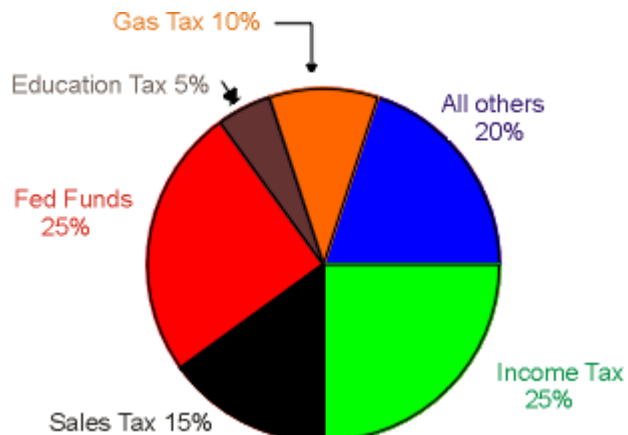
Use the pie chart shown to answer the following question.  
In this state for every \$100 collected from all others, how much is collected from income tax?



- (A) 5
- (B) 40
- (C) 60
- (D) 100
- (E) 125

### Question 6

Use the pie chart shown to answer the following question.  
If this state has total revenues of 700 million dollars, how many millions are received from the sales tax?



- (A) 1.05 (D) 105
- (B) 10.5 (E) 175
- (C) 15

## Studyguide for the SAT Skill Quiz A: Tables/Charts/Graphs

### Question 7

To the nearest percentage point, what percent of the people responding to the survey shown voted for basketball as their favorite sport?

- (A) 15
- (B) 20
- (C) 25
- (D) 27
- (E) 30

### Survey of Votes for Favorite Sport

Sport	Votes
Tennis	37
Volleyball	24
Bowling	21
Baseball	30
Basketball	27
Football	41

### Question 8

### Electricity Charges for Power Company A

0 - 100 Kilowatt-Hours	\$15.00
Each Kilowatt-Hour over 100	\$0.09

Use the table shown to answer the following question. What does Power Company A charge for the use of 1,000 kilowatt-hours?

- (A) 15
- (B) 90
- (C) 96
- (D) 105
- (E) 120

### Question 9

According to the table shown, which of the movies was rated worst for adults?

- (A) A
- (B) B
- (C) C
- (D) D
- (E) E

### Movie Rating Chart

Movie	Adult Rating	Children Rating
A	3	1
B	2	4
C	3	4
D	4	2
E	1	1

Worst                      Best  
1      2      3      4

### Question 10

If the shown rating system is used, how many different combinations of adult and children ratings is it possible for a movie to receive?

- (A) 2
- (B) 4
- (C) 8
- (D) 16
- (E) 24

Movie Rating Chart

Movie	Adult Rating	Children Rating
A	3	1
B	2	4
C	3	4
D	4	2
E	1	1

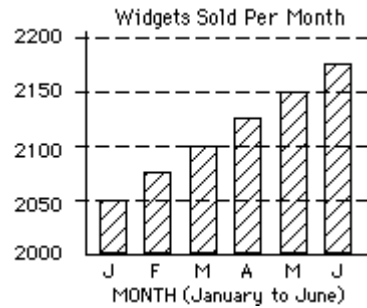
Worst                      Best  
1      2      3      4



## Question 1

Use the graph shown to determine how many more widgets were sold in June than January.

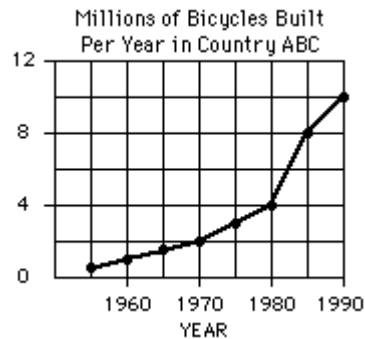
- (A) 25
- (B) 50
- (C) 75
- (D) 100
- (E) 125



## Question 2

In the graph shown, which of the following could be the number of bicycles built in 1975?

- (A) 3,100
- (B) 4,000
- (C) 2,000,000
- (D) 3,100,000
- (E) 4,000,000



## Telephone Call Costs

From City X to:	First 3 minutes:	Each additional minute:
City Y	60¢	20¢
City Z	20¢	5¢

## Question 3

Based on the table above, what is the cost of a 15-minute phone call from city X to city Y?

- (A) \$0.80
- (B) \$3.00
- (C) \$4.00
- (D) \$4.60
- (E) \$5.00

## Studyguide for the SAT Skill Quiz B: Tables/Charts/Graphs

### Telephone Call Costs

<u>From City X to:</u>	<u>First 3 minutes:</u>	<u>Each additional minute:</u>
City Y	60¢	20¢
City Z	20¢	5¢

#### Question 4

Based on the table above, what is the difference in cost of a 20-minute call from city X to city Y and a 20-minute call from city X to city Z?

- (A) \$1.05      (B) \$1.20      (C) \$1.95  
(D) \$2.95      (E) \$3.00

### High School Students

<u>Age</u>	<u>Number of Students</u>
14	5
15	6
16	10
17	10

#### Question 5

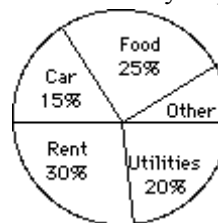
What is the approximate average age of the students in the chart above?

- (A) 14.6      (B) 15.0      (C) 15.8  
(D) 16.5      (E) 16.8

#### Question 6

Jane's monthly expenses total \$1,750 per month and are distributed as shown in the pie chart. How much does she spend for "other" expenses each month?

Jane's Monthly Expenses



- (A) \$10  
(B) \$90  
(C) \$125  
(D) \$175  
(E) \$250

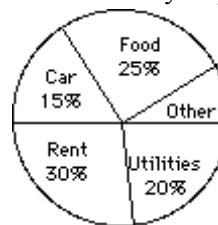


## Question 7

If Jane's monthly expenses total \$1,750 per month, how much more does Jane spend for food than for utilities?

- (A) \$37.50
- (B) \$87.50
- (C) \$175.00
- (D) \$350.00
- (E) \$437.50

Jane's Monthly Expenses



## Question 8

In the two years in which the boxes of peaches sold remained constant, how many boxes of peaches were sold each year?

- (A) 3,000
- (B) 9,000
- (C) 12,000
- (D) 15,000
- (E) 24,000

Peach Sales

1989	●●●●●
1988	●●●●
1987	●●●●
1986	●●●

Key : Each ● represents 3,000 boxes of peaches

## Question 9

How many more boxes of peaches were sold in 1989 than in 1986?

- (A) 2,000
- (B) 4,000
- (C) 6,000
- (D) 8,000
- (E) 10,000

Peach Sales

1989	●●●●●
1988	●●●●
1987	●●●●
1986	●●●

Key : Each ● represents 3,000 boxes of peaches

### Survey of Votes for Favorite Sport

<u>Sport</u>	<u>Votes</u>
Tennis	37
Volleyball	24
Bowling	21
Baseball	30
Basketball	27
Football	41

#### Question 10

To the nearest percentage point, what percent of the people responding to the survey above voted for baseball as their favorite sport?

- (A) 12%      (B) 17%      (C) 25%  
(D) 30%      (E) 35%



## Employees of Company A

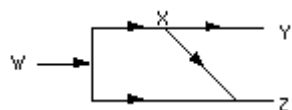
Year	1	2	3	4	5
------	---	---	---	---	---

Number of Employees	17	51	153	459
------------------------	----	----	-----	-----

### Question 1

The number of people employed by Company A has increased by a constant multiple from year to year as shown in the chart above. If this pattern continues, how many people can Company A expect to employ in year 5?

- (A) 947
- (B) 1,063
- (C) 1,162
- (D) 1,377
- (E) 1,577



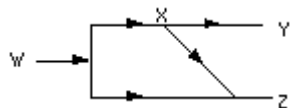
A traffic survey shows that of every 10 cars that arrive at point W, 6 turn toward point X and 4 turn toward point Z. Of every 6 cars that arrive at point X, 2 turn toward point Z and 4 turn toward point Y.

### Question 2

Of 100 cars arriving at point W, how many are expected to turn toward point X?

- |         |        |
|---------|--------|
| (A) 100 | (D) 40 |
| (B) 80  | (E) 20 |
| (C) 60  |        |

## Studyguide for the SAT Skill Quiz A: Modify or Label Diagrams



A traffic survey shows that of every 10 cars that arrive at point W, 6 turn toward point X and 4 turn toward point Z. Of every 6 cars that arrive at point X, 2 turn toward point Z and 4 turn toward point Y.

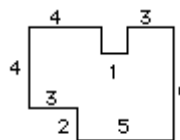
### Question 3

Of 70 cars arriving at point W, how many are expected eventually to reach point Z?

- |        |        |
|--------|--------|
| (A) 28 | (D) 49 |
| (B) 35 | (E) 56 |
| (C) 42 |        |

### Question 4

What is the perimeter of the figure shown?

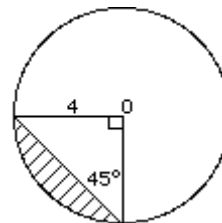


NOTE: FIGURE NOT DRAWN TO SCALE

- |   |
|---|
| (A) 29  |
| (B) 31  |
| (C) 33  |
| (D) 35  |
| (E) It cannot be<br>determined from the<br>information given. |

## Question 5

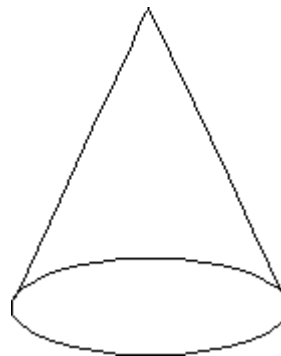
In the figure shown, if  $O$  is the center of the circle and the radius of the circle is 4, what is the area of the shaded region?



- (A)  $16\pi + 8$
- (B)  $16\pi - 8$
- (C)  $4\pi - 4$
- (D)  $4\pi - 8$
- (E) It cannot be determined from the information given.

## Question 6

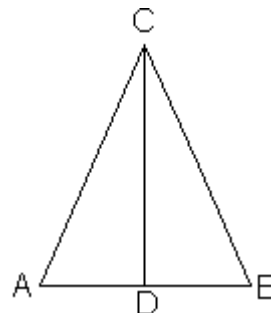
The figure shown is a right circular cone. The height of the solid cone is 20 inches and the radius of the base is 8 inches. A slice parallel to the base is made completely through the cone. If the radius of the resulting smaller cone is 6 inches, what is the height of the smaller cone?



- (A) 10
- (B) 12
- (C) 15
- (D) 18
- (E) 27

## Question 7

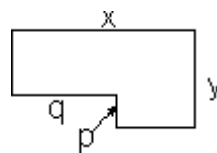
In the triangle shown,  $AC = BC$  and  $CD$  bisects  $AB$ . if  $AC = 10$  and  $AB = 12$ , what is the length of  $CD$ ?



- (A) 6.6
- (B) 8
- (C) 11.7
- (D) 15.6
- (E) 16

## Question 8

In the figure shown, which of the following is the area of the figure?



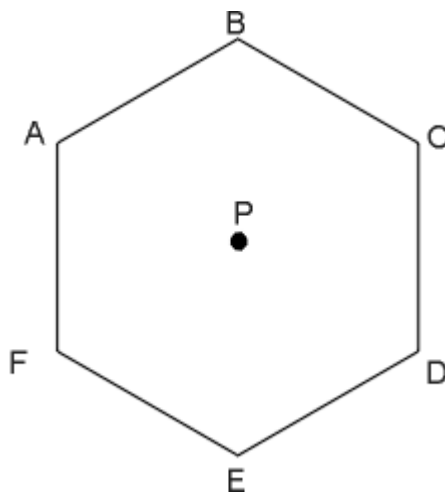
- (A)  $2(x + y)$
- (B)  $xy + pq$
- (C)  $xy - pq$
- (D)  $x(p + q) + y$
- (E)  $x^2 + y^2 - pq$

## Question 9

In the figure shown, hexagon ABCDEF, is a regular hexagon.

(It has equal angles and equal sides.)

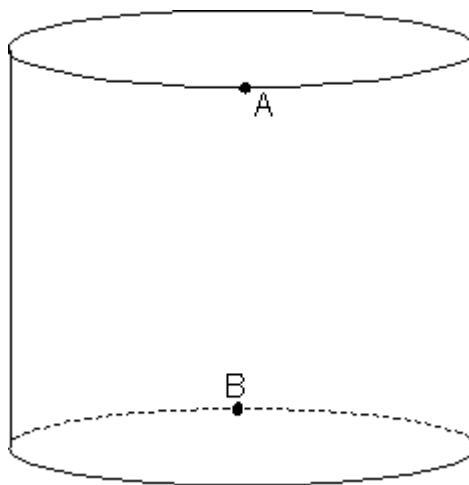
If P is the center of the hexagon, what is the measure of  $\angle EPD$ ?



- (A) 45
- (B) 60
- (C) 72
- (D) 75
- (E) 80

## Question 10

The figure shown is a cylinder with radius 3 and height 7. If points A and B lie on the circumference of the top and bottom of the cylinder, respectively, what is the greatest straight-line distance between A and B?

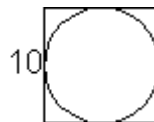


- (A) 4
- (B)  $\sqrt{58}$
- (C)  $\sqrt{85}$
- (D) 10
- (E)  $\sqrt{130}$



## Question 1

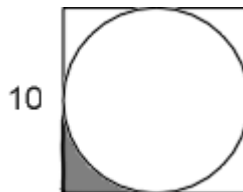
In the figure shown, a circle is inscribed in a square with side 10. What is the circumference of the circle?



- (A)  $5\sqrt{2}$
- (B)  $5\pi$
- (C)  $10\pi$
- (D)  $10\pi\sqrt{2}$
- (E)  $50\pi$

## Question 2

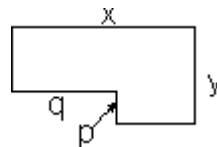
In the figure shown, a circle is inscribed in a square with side 10. What is the area of the shaded portion?



- (A)  $25 - 25\pi/4$
- (B)  $100 - 25\pi$
- (C)  $25 + 25\pi/4$
- (D)  $25\pi$
- (E) 100

## Question 3

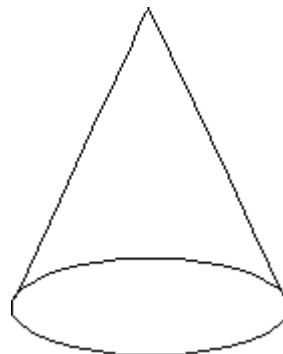
In the figure shown, which of the following is the perimeter of the figure?



- (A)  $x + y$
- (B)  $x + y + p + q$
- (C)  $2x + p + q + y$
- (D)  $2(x + y)$
- (E)  $2(x + y) + (p + q)$

## Question 4

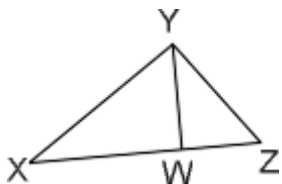
The figure shown is a right circular cone. The height of the solid cone above is 30 inches and the radius of the base is 10 inches. A slice parallel to the base is made completely through the cone. If the radius of the resulting smaller cone is 6 inches, what is the height of the smaller cone?



- (A) 10
- (B) 12
- (C) 15
- (D) 18
- (E) 27

Grid-in your answer here:

## Question 5

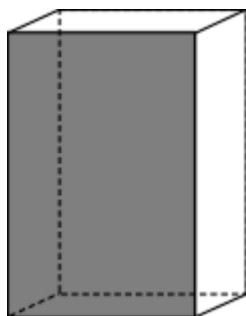


In the figure shown, XYZ is a right triangle with altitude YW. If  $XY = 8$  and  $YZ = 6$ , what is the value of XW?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

## Question 6



The volume of the rectangular solid above is 24 cubic inches and its depth is  $\frac{3}{4}$  inch. What is the area, in square inches, of the shaded face?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9



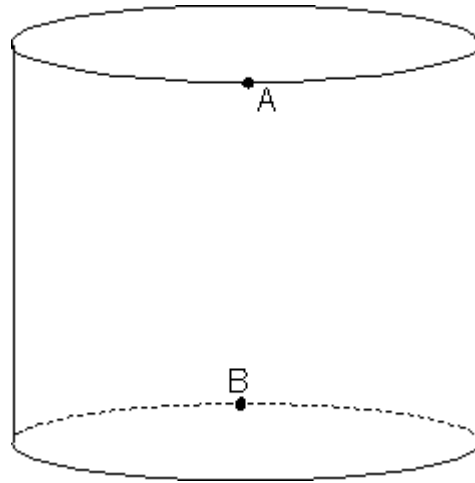


### Question 10

Figure not drawn to scale.

The figure shown is a cylinder with radius 4 and height 5. If points A and B lie on the circumference of the top and bottom of the cylinder, respectively, what is the greatest straight-line distance between A and B?

- (A) 4
- (B) 5
- (C)  $\sqrt{41}$
- (D) 8
- (E)  $\sqrt{89}$





### Question 1

At Kennedy High School, the Spanish Club has 25 members and the Photography Club has 22 members. If a total of 23 students belong to only one of the two clubs, how many students belong to both clubs?

- |       |        |
|-------|--------|
| (A) 1 | (D) 12 |
| (B) 2 | (E) 24 |
| (C) 3 |        |

### Question 2

If one side of a ruler is to be marked in  $\frac{1}{6}$ -inch units and in  $\frac{1}{4}$ -inch units on the same edge, how many different such marks are needed from the 2-inch mark to the 3-inch mark, including the end points?

- |       |        |
|-------|--------|
| (A) 5 | (D) 10 |
| (B) 7 | (E) 12 |
| (C) 9 |        |

### Question 3

A train departs with  $x$  people. If half the remaining people on the train get off at each stop and the next to the last person leaves at the fifth stop, what is  $x$ ?

- (A) 4
- (B) 8
- (C) 16
- (D) 32
- (E) 64

### Question 4

If  $x$ ,  $y$ , and  $z$  are points on a line, in that order, and the ratio of  $xy$  to  $xz$  is 1 to 3, what is the ratio of  $xy$  to  $yz$ ?

- (A) 1 to 1
- (B) 1 to 2
- (C) 1 to 3
- (D) 2 to 1
- (E) It cannot be determined from the information given.

### Question 5

If a square and an equilateral triangle have sides of the same length, then the ratio  $\frac{\text{area of a triangle}}{\text{area of a square}} =$

- (A)  $\frac{1}{2}$
- (B)  $\frac{\sqrt{2}}{2}$
- (C)  $\frac{\sqrt{3}}{2}$
- (D)  $\frac{\sqrt{3}}{4}$
- (E)  $\frac{3}{4}$

### Question 6

Airplane X and airplane Y fly along parallel paths, each 2,500 miles long. If they start at the same time and if X flies at a constant speed of 500 miles per hour and Y flies at a constant speed of 420 miles per hour; how many miles will Y have left to fly after X completes its flight?

- (A) 100
- (B) 300
- (C) 350
- (D) 400
- (E) 420

### Question 7

Points X, Y, Z, and W lie on a line in that order.  $\frac{XW}{XZ} = \frac{5}{2}$  and

$\frac{XW}{XY} = \frac{10}{3}$ . What is the value of  $\frac{ZW}{YW}$ ?

- (A)  $\frac{2}{5}$
- (B)  $\frac{6}{7}$
- (C) 1
- (D)  $\frac{4}{3}$
- (E)  $\frac{5}{2}$

### Question 8

Points U, V, W, X, Y, and Z are all different points lying in the same plane. The points U, V, and W lie on the same line. The line through points U and V is perpendicular to the line through points X and Y. The line through points X and Y is perpendicular to the line through points W and Z. Which of the following sets contains points that must lie on the same line?

- (A) {U,V,Y}
- (B) {V,W,X}
- (C) {X,Z,W}
- (D) {V,X,Z}
- (E) {V,W,Z}

## Studyguide for the SAT Skill Quiz A: Draw a Diagram

### Question 9

In rectangle WXYZ point R is the midpoint of side WZ. If the area of quadrilateral WXYR is  $\frac{3}{8}$ , what is the area of rectangle WXYZ?

- (A)  $\frac{9}{32}$
- (B)  $\frac{3}{8}$
- (C)  $\frac{1}{2}$
- (D)  $\frac{3}{4}$
- (E)  $\frac{8}{3}$

Grid-in your answer here:

### Question 10

Five points V, W, X, Y, and Z lie on a line, not necessarily in that order. Segment VW has length 28. Point X is the midpoint of segment VW and point Y is the midpoint of segment VX. If the distance between Z and Y is 3, what is one possible distance between V and Z?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9



### Question 1

The average of three numbers is 54. If 47 and 53 are two of the numbers, what is the third number?

- (A) 46
- (B) 54
- (C) 60
- (D) 62
- (E) 65

### Question 2

If the mean of  $a$  and 40 is 5 more than the mean of  $b$  and 40, what is the value of  $a - b$ ?

- (A) 4
- (B) 8
- (C) 10
- (D) 15
- (E) 30

### Question 3

If the mean of  $x$ ,  $y$ , and 50 is the same as the mean of  $y$ , 30, and 50, what is the value of  $x$ ?

- (A) 10
- (B) 20
- (C) 30
- (D) 40
- (E) 50

## Studyguide for the SAT Skill Quiz A: Averages

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### Question 4

If the mean of six numbers is 10, and the sum of four of the numbers is 24, what is the mean of the other two numbers?

- (A) 6
- (B) 8
- (C) 12
- (D) 18
- (E) 24

### Question 5

If Mary picks strawberries at a rate of  $x$  quarts per hour, how many quarts does she pick in 5 hours, in terms of  $x$ ?

- (A)  $x + 5$
- (B)  $x/5$
- (C)  $5/x$
- (D)  $5x$
- (E)  $x^3$

### Question 6

If Bill scores 80, 60, and 85 on his first three tests, what must he score on the fourth test to keep his mean unchanged?

- (A) 70
- (B) 75
- (C) 80
- (D) 85
- (E) 90



## Studyguide for the SAT Skill Quiz A: Averages

Grid-in your answer here:

### Question 7

What is the mean speed, in miles per hour, of a car that travels 40 miles per hour for 1 hour and 60 miles per hour for one-half hour?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

### Question 8

The average cost of beans in the grocery store is \$1.19 / pound.  
Your total bill for purchasing only beans was \$5.95.  
How many pounds of beans did you buy?

- (A) 3.4
- (B) 4
- (C) 4.3
- (D) 5
- (E) 5.5

### Question 9

The average of 8 positive numbers is 22. If the average of the least and the greatest of these is 28, what is the average of the other six?

- (A) 18
- (B) 19
- (C) 20
- (D) 21
- (E) 22

### Question 10

The average of 5 positive numbers is 36. If the average of the least and the greatest is 15, what is the average of the other three numbers?

- (A) 47
- (B) 48
- (C) 49
- (D) 50
- (E) 51



### Question 1

The mean of  $\{x, 4, 5, 10\}$  is 6. What is the mode of  $\{x, 3, 5, 10\}$ ?

- (A) 1
- (B) 3
- (C) 5
- (D) 10
- (E) 24

### Question 2

If  $x$  is some number between 2 and 8, which of the following could be the mean of the numbers 2, 4, 7, 8, 9, and  $x$ ?

- (A) 5.2
- (B) 5.7
- (C) 6.4
- (D) 7.2
- (E) 9.3

### Question 3

If the average (arithmetic mean) of  $x$  and  $y$  is 30, then what is the average of  $5x$  and  $5y$ ?

- (A) 6
- (B) 30
- (C) 150
- (D) 300
- (E) 350

### Question 4

Peggy ran 3 kilometers in 20 minutes. What is her average speed in kilometers per hour?

- (A) 3
- (B) 9
- (C) 12
- (D) 15
- (E) 20

## Studyguide for the SAT Skill Quiz B: Averages

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### Question 5

The average of  $x$ ,  $y$ ,  $p$ , and  $q$  is 8. If the average of  $x$  and  $y$  is 5, what is the average of  $p$  and  $q$ ?

- (A) 5
- (B) 8
- (C) 11
- (D) 22
- (E) 32

### Question 6

If the average of three consecutive integers is  $S$ , then in terms of  $S$ , what is the greatest of these integers?

- (A)  $S + 1$
- (B)  $(S/3) + 1$
- (C)  $S - 1$
- (D)  $S/3$
- (E)  $(S/3) - 1$

### Question 7

A class with 20 students has an average test score of 70. On the same test an accelerated class of 10 students has an average test score of 94. If the scores of the two classes were combined what would be the average test score?

- (A) 75
- (B) 78
- (C) 82
- (D) 85
- (E) 88

### Question 8

If the average of 2 and  $x$  is equal to the average of 3, 4, and  $x$ , what is the value of  $x$ ?

- (A) 8
- (B) 7
- (C) 6
- (D) 5
- (E) 4

Studyguide for the SAT Skill Quiz B: Averages

Grid-in your answer here:

Question 9

The average of four positive integers is 375. The smallest of the integers is 121. If all four integers are different, what is the greatest possible value for any of the four integers?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

Question 10

The average test score of a class with x students is 60 and the average test score of a different class with y students is 80. If their combined average test score is 72, what is the value of x/y?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9





### Question 1

If the mean of three numbers is between 5 and 10, then the sum of the three numbers could be any one of the following **except**

- (A) 16
- (B) 18
- (C) 21
- (D) 29
- (E) 42

### Question 2

At the tire company where he works, Andre changed 20 tires on Monday, 30 tires on Tuesday, and 20 tires on Wednesday. How many tires must he change on Thursday in order for the mean number of tire changes for the four days to be 25?

- (A) 10
- (B) 20
- (C) 25
- (D) 30
- (E) 35

### Question 3

If the sum of four consecutive integers is 302, what is the largest of these integers?

- (A) 78
- (B) 77
- (C) 76
- (D) 75
- (E) 74

### Question 4

Rosalyn made 78%, 89%, and 94% on her first three math tests.

What must she make on the next math test in order to have an overall average of 90%?

- (A) 96
- (B) 97
- (C) 98
- (D) 99
- (E) 100

### Question 5

During a recent trip to Mexico, Edward kept a table of how much money he spent in pesos each day. What was the average amount in pesos that he spent each day?

S	M	T	W	Th
75	80	63	98	72

- (A) 75.9
- (B) 77.6
- (C) 78.4
- (D) 81.4
- (E) 84



### Question 6

The average of four numbers is 25.  
What number would need to be added to  
the four numbers to bring the average up to 30?

- (A) 20
- (B) 30
- (C) 40
- (D) 50
- (E) 60

### Question 7

In a recent gymnastics competition, the scores were obtained by averaging the scores of 10 judges. After 9 judges had reported their scores, Sherry had an average score of 9.2. After the 10th judge reported her score, Sherry had an average of 9.0. What score did the 10th judge give Sherry?

- (A) 7.0
- (B) 7.2
- (C) 7.4
- (D) 7.6
- (E) 7.8

## Studyguide for the SAT Skill Quiz C: Averages

Grid-in your answer here:

### Question 8

A class with 20 students has an average test score of 70. On the same test an accelerated class of 10 students has an average test score of 85. If the scores of the two classes were combined what would be the average test score?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

### Question 9

On a trip to visit relatives in another state it took Binta a total of 11 hours to drive there and back on the same road. The time excluded rest stops. If she averaged 50 miles per hour going and 60 miles per hour returning, how many miles was it from her house to her relatives?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Grid-in your answer here:

### Question 10

If the average (arithmetic mean) of five positive integers is 91, what is the greatest possible value for one of these integers?

	/	/	
.	.	.	.
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9